HOUSING: ACCOMMODATING CORE EMPLOYMENT GROWTH

JUNE 1983

A COREPLAN BACKGROUND REPORT

VANCOUVER CITY PLANNING DEPARTMENT

ABOUT THE COREPLAN AND THIS REPORT

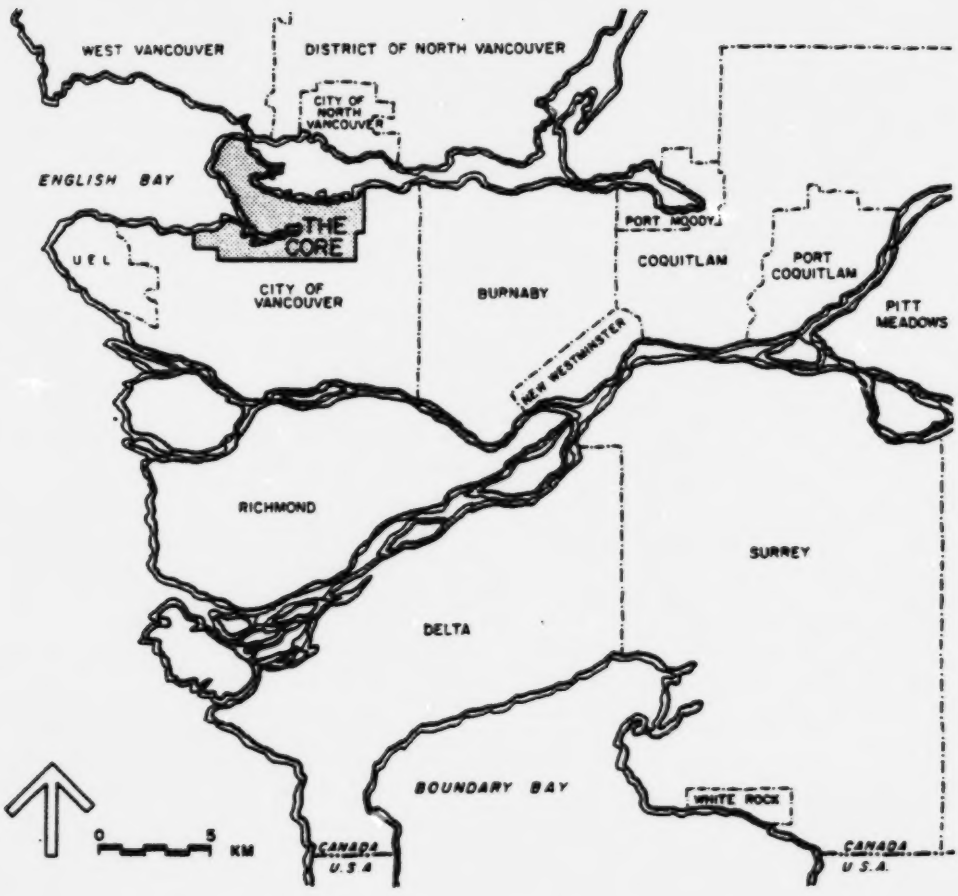
The Vancouver core is the heart of Canada's third largest metropolitan region. Centred on the downtown, the core also includes the West End, False Creek, Central Broadway, and the inner-city neighbourhoods of Strathcona, Grandview-Woodland, Mount Pleasant, Fairview, and Kitsilano.

The core is now changing very rapidly, and change may accelerate in the future. Some of this change will be produced by major projects such as B.C. Place and ALRT, but most will come as the cumulative result of lots of smaller changes — none being very significant individually but all adding up to a much different core and a much different Vancouver. Change at the core will affect the whole city and the entire Vancouver region.

The Coreplan is an attempt to understand and deal with the consequences of this change. It is a program for monitoring change and its implications, a strategy for managing change in Vancouver's interests, and a basis for discussing and deciding about change as it affects our future.

This background report is one of a series produced in preparation of the Vancouver Coreplan. These reports review existing plans and policies, prospects for growth and change, community values, and other matters which have a bearing on the future of the core and on the future of Vancouver as a whole.

Each background report represents the work of particular individuals or firms. The principal author of this report was Phil Mondor.


WEST VANCOUVER
DISTRICT OF NORTH VANCOUVER
CITY OF NORTH VANCOUVER
ENGLISH BAY
THE CORE
U.B.C.
CITY OF VANCOUVER
BURNABY
PORT MOODY
COQUITLAM
PORT COQUITLAM
PITT MEADOWS
NEW WESTMINSTER
RICHMOND
SURREY
DELTA
BOUNDARY BAY
WHITE ROCK
0
5
KM
CANADA
U.S.A.
CANADA
U.S.A.

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SUMMARY

Employment in Vancouver's core has been projected to grow by anywhere from 50 000 to 100 000 jobs by 2001. These projections may seem optimistic for they are based on the trends of the last two decades and stand in sharp contrast to the very high level of unemployment in the current recession. Nevertheless, economic recovery is possible and so is a resumption of trend rates of office space construction and employment growth.

Perhaps as few as 20 000 of projected additional core employees could hope to live in Vancouver. The reason for this is that there is little potential for more housing in the city under current zoning regulations and policies. On the basis of trends this potential could be exhausted by the end of this decade.

An estimated one-third of the people who now work in Vancouver's core commute from homes outside the city. Given that far too little housing may be available to meet anticipated housing demand, as many as three-quarters of the people who will fill new jobs in the core over the next two decades may have to find homes in the suburbs. For more and more people the distance between home and workplace will grow longer, and this will mean considerable growth in commuter travel.

For the past fifteen years, there have been no major additions to Vancouver's street system and few improvements in access to the downtown peninsula. Several streets and bridges are already reaching the physical limits of their rush-hour capacity. Aside from ALRT, little improvement in the capacity of the regional transportation system or in access to the downtown peninsula is planned. Accordingly, future growth in commuter travel would increase congestion, travel delays, travel time, travel costs, and disruption along major arterials in Vancouver.

If commuter travel to Vancouver's core becomes more difficult and if the city's housing stock can grow so little that it might accommodate as few as a quarter of additional core employees, housing availability and affordability in Vancouver are sure to be affected. The prices and rents of both new and existing housing will rise as scarce accommodation is bid up in value by those people with the highest incomes. A considerable amount of older, affordable housing will be lost through demolition, rehabilitation,

and redevelopment. In these circumstances it is likely that present city residents on low incomes and with little security of tenure will be displaced.

One strategy by which the City might address this situation is to increase housing potential, allowing the housing market to respond more fully to the housing demand of additional core employees. Zoning regulations could be amended to allow housing where it is not permitted now, or to allow more of it where it is already permitted. Increasing the city's housing potential would involve three tasks:

1) establishing a long-term target that specifies the number and type of dwellings, in net units, that it is desired to add to the city's zoned potential for more housing;

2) identifying areas which are suitable for more housing, particularly areas with excess capacities in public facilities and services; and

3) conducting consultative planning in areas suited for more housing and adopting area plans and zoning by-law amendments which increase housing potential in these areas.

Increasing Vancouver's potential for more housing could solve some problems associated with core employment growth. Although the problems of housing availability and affordability may not become less serious, they will perhaps be prevented from becoming far worse. Furthermore, we could avoid or reduce the environmental and capital costs of major transportation system improvements which would otherwise be necessary.

An increase in the city's potential for more housing also seems well suited to present circumstances in which long term growth prospects are uncertain. An expansion of housing opportunity has a positive role to play no matter how small or large the dimensions of future growth might be because housing affordability is already a serious enough problem without future housing demand putting additional pressure on a limited housing supply.

HOUSING: ACCOMMODATING CORE EMPLOYMENT GROWTH

INTRODUCTION

This Coreplan background report is about the housing implications of future employment growth in Vancouver's core. In the post-war decades, more and more population and labour force growth has occurred in the suburban areas of metropolitan Vancouver while the city has remained the focus of employment growth. The results of this pattern of growth include declining housing affordability in Vancouver, and increased commuter travel from the suburbs, requiring ever more public investment in the regional transportation system.

Two questions are examined in this report. First, how will housing in Vancouver be affected by future employment growth in the city's core? Second, how can the unacceptable consequences be prevented or mitigated?

In PART A: SITUATION, the past growth of population, labour force, and employment in the city and surrounding metropolitan area is briefly described as well as the current situation in the core. The city's existing plans and policies which address the relationship between employment and housing are then briefly examined. This is followed by a brief discussion of current concerns raised by the potential for future employment growth in the core.

In PART B: PROSPECTS, future employment prospects in the core are summarized. These are translated into labour force requirements and housing demand estimates. Housing supply prospects, severely circumscribed by the city's presently limited potential for more housing, are estimated and compared to housing demand prospects.

In PART C: PROBLEMS, the growing imbalance between housing demand and supply, which results in ever-diminishing housing opportunity, is seen to generate some serious problems. Declining affordability, dislocation of city residents, reduced socio-economic diversity of the city's population, and the transformed character of city neighbourhoods are some of the consequences which conflict with citizen aspirations for Vancouver.

In PART D: OPTIONS, some broad alternatives for addressing the housing problems of core employment growth are identified and discussed. One of these, increasing the city's potential for more housing, is examined in greater detail — not only because housing is the subject of this report but because housing opportunity is already a matter of great concern for which many residents and most civic leaders want urgent action.

PART A: SITUATION

1. Historical Background

During most of Vancouver's history, employment and population in the city have grown in fairly close relation to one another. Until the second world war, most of the jobs and people in the Lower Mainland were in Vancouver. Beginning in the late 1940s and early 1950s, however, increased population growth began to occur in the suburban cities and municipalities surrounding Vancouver.

Suburban growth is a phenomenon that Vancouver shares with most, if not all, other North American cities. In city after city, the 1950s and 1960s saw subdivision upon subdivision spread into surrounding countryside. "Bedroom communities" they were called. Husbands commuted to work places in the central city while mothers raised the baby boom generation. Cities grew up and out -- towers for office workers downtown, bungalows for their families in the suburbs. Cities at the centre of large metropolitan areas have, in most cases, experienced population decline at the same time as employment growth.

Thirty years ago, Vancouver's population was two-thirds of the metropolitan population. In 1981, Vancouver's population (about 21 percent greater than in 1951) was now only a third of the metropolitan total (which more than doubled since 1951). And yet, about half of the jobs in the metropolitan area in 1981 are in the city. Figure 1 illustrates that recent employment growth in Vancouver has not been balanced by population growth. Between 1971 and 1981, the number of jobs is estimated to have increased by about 26 percent, but population decreased by about 3 percent (1). Although substantial employment growth occurred in the suburbs in the 1970s, as shown in Figure 1, it fell far short of reversing the momentum established during the 1950s and 1960s.

Labour force, defined as those people either working or looking for work, has been a growing proportion of the city's population. Figure 2, based on 1971 Census data and 1980 estimates, shows a 5 percent increase in the size of the city's labour force during the 1970s. Nevertheless, labour force growth fell far short of the 26 percent increase in employment. As a result, the ratio of workers living in the city to jobs in the city decreased from 0.89 in 1971 to an estimated 0.74 in 1980.

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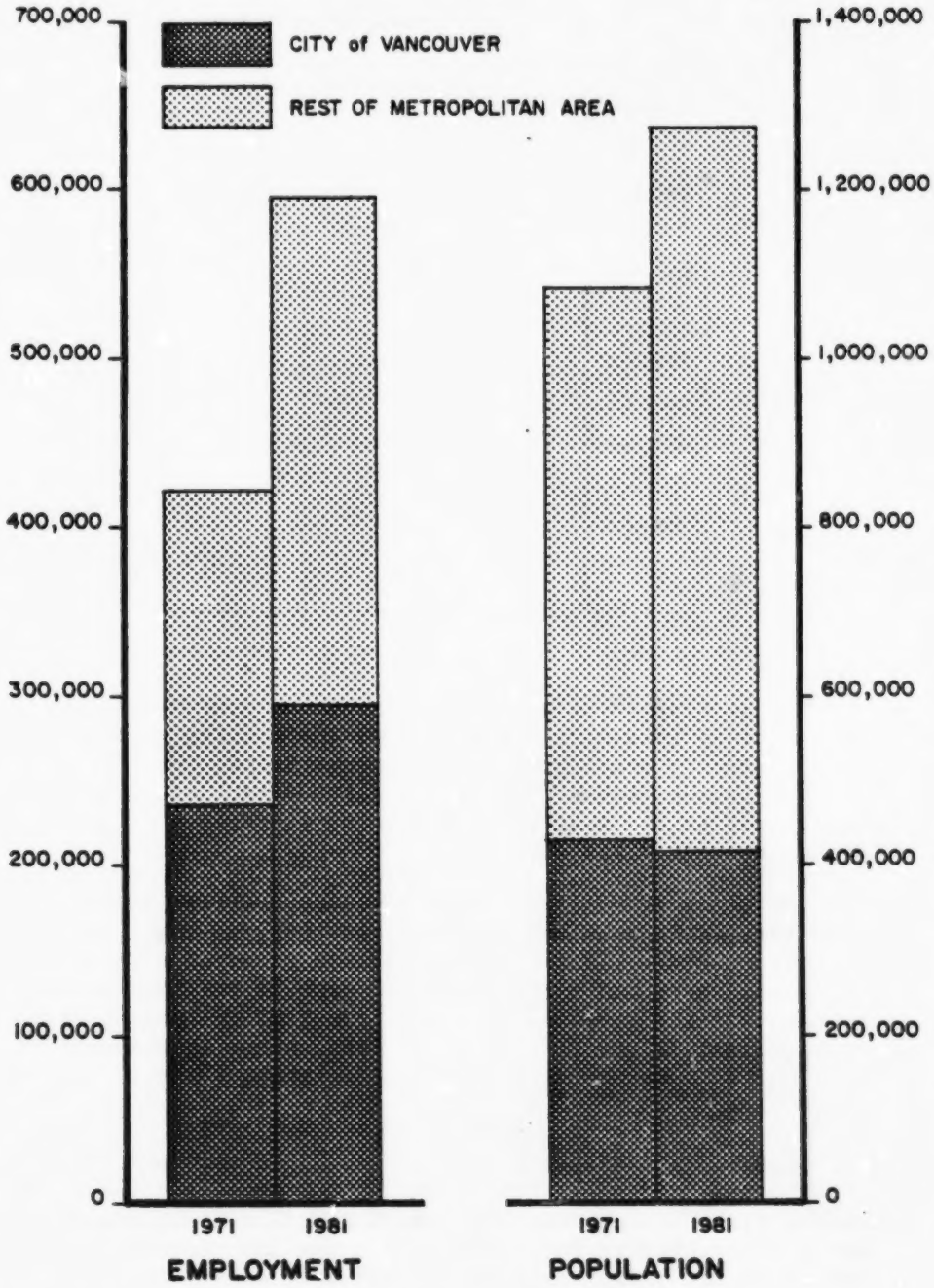
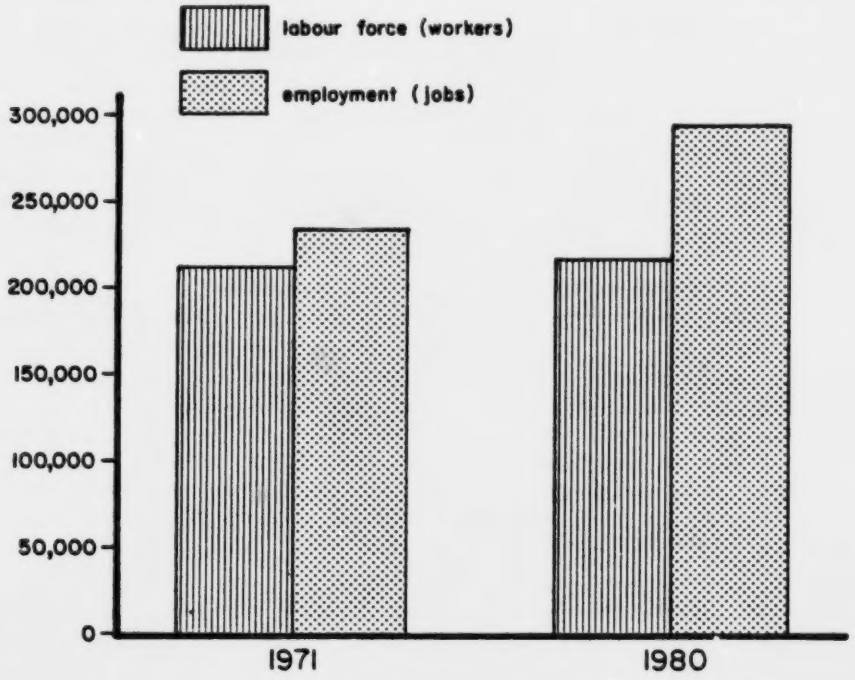
(1) See "Employment Estimates" (pp. 17-20), in Population, Housing, Labour Force and Employment Growth, GVRD Planning Department, February, 1981.

Figure 1. Employment and Population, Vancouver City and Metropolitan Area, 1971 and 1981



NOTE: Employment is actually for the Greater Vancouver Regional District rather than the Vancouver Census Metropolitan Area. Since there is very little employment in the GVRD outside the CMA, the broad comparison made here is little affected. Furthermore, employment shown for 1981 is actually a 1980 estimate made by the GVRD Planning Department, and is acceptable for our comparison purposes.

Figure 2. Labour Force and Employment, Vancouver, 1971 and 1980

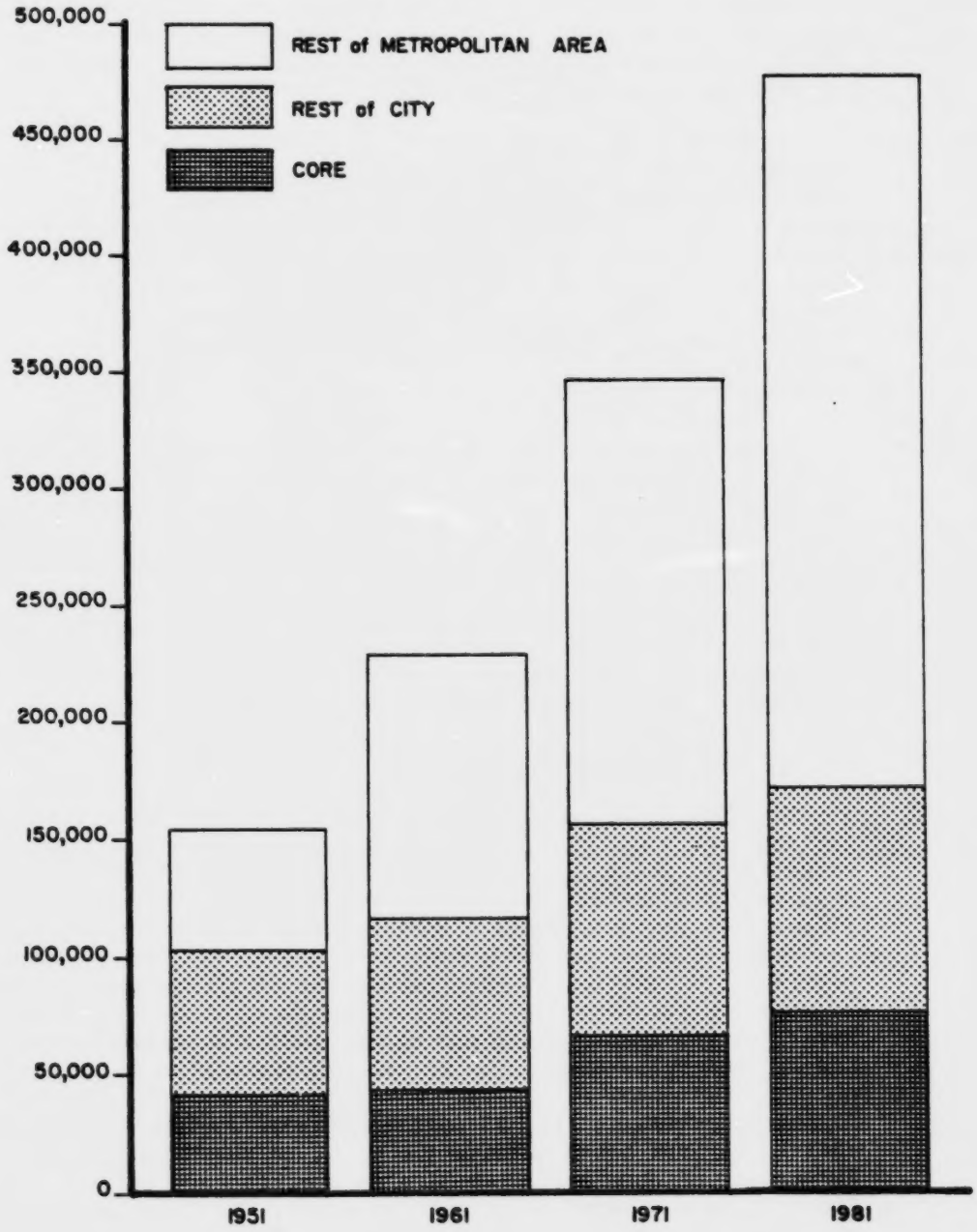


The geographic pattern of labour force growth described here is very closely related to expansion of the housing supply. While the city's housing stock grew by 13 percent during the 1970s, it grew 58 percent in the rest of the metropolitan area. About 85 percent of the growth in the metropolitan housing stock in the last decade occurred outside Vancouver.

The stock of housing in the Vancouver metropolitan area has more than tripled in size between 1951 and 1981, as shown in Figure 3. More than three-quarters of this growth occurred outside the city such that there was a five-fold increase in the size of the suburban housing stock. Vancouver had 66 percent of the metropolitan area's housing in 1951 and 36 percent in 1981. This corresponds to the observation made about Vancouver's declining share of regional population.

Figure 3 vividly shows how the core and the rest of the city have been providing less and less of the housing to meet the requirements of a growing metropolitan job force - about half of which is working in Vancouver. Over the last decade about 2 000 dwellings per year were added to the city's housing stock, as

Figure 3. Total Occupied Dwellings, 1951-1981



compared to over 11 000 dwellings annually in the rest of the metropolitan area, more than five times as many as in Vancouver. Residential development thus plays a key role in shaping the distribution of labour force and population. Given a concentrated distribution of jobs, the balance of workers to jobs in various parts of the metropolitan area is worsened by the dispersed pattern of housing, population, and labour force growth.

It is pertinent here to note another factor which has exacerbated the balance of workers to jobs in the city. This is housing occupancy or household size. While Vancouver's housing stock increased about 13 percent during the last decade, its labour force is estimated to have increased only 5 percent. Why? First, total city population size decreased by about 3 percent, through a decline in average household size. In 1971 there was an average of 2.44 persons per household in the city, and 2.29 in 1981. This is a 6 percent decrease. A second trend is that the number of households without a wage earner, e.g. the elderly, has increased.

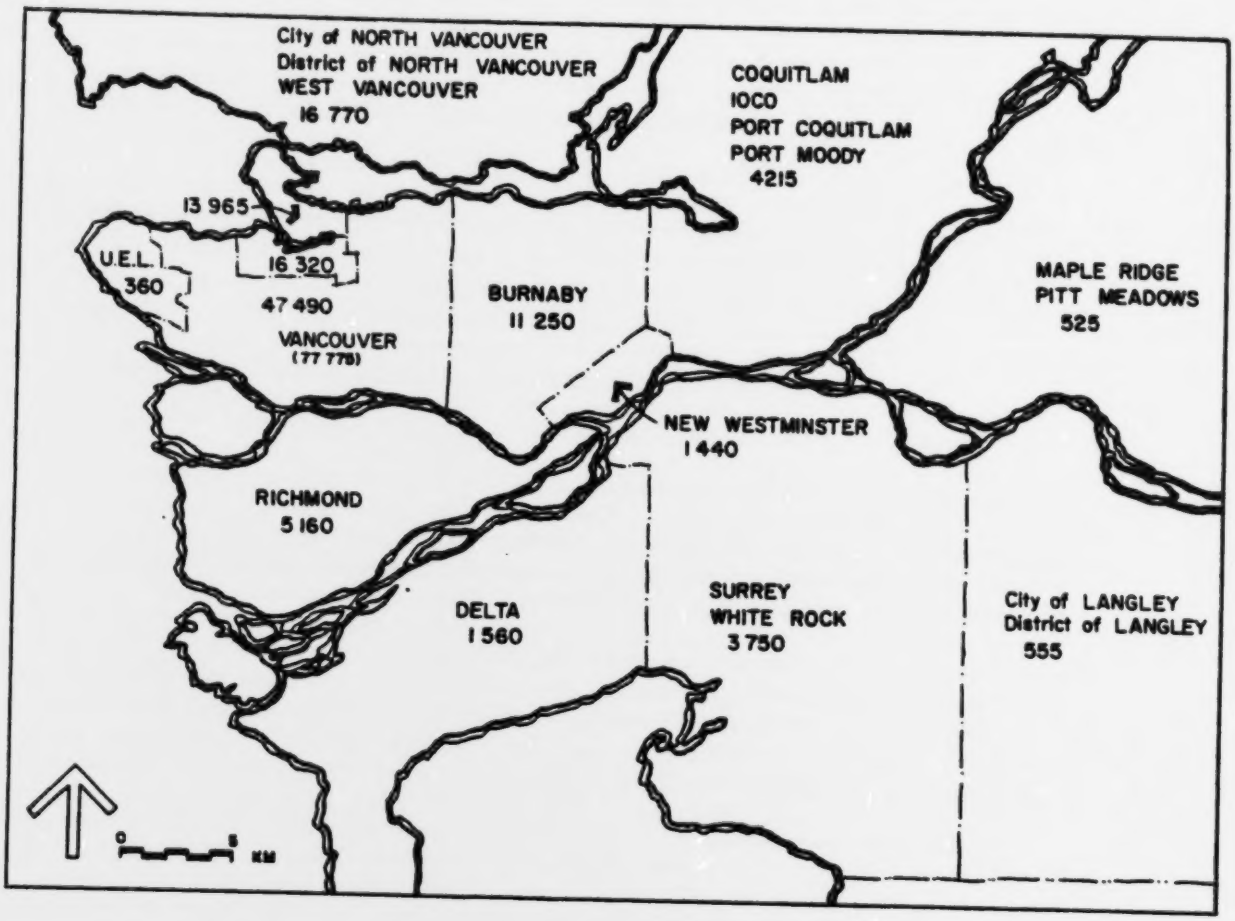
These two trends have had the effect of reducing the average number of workers per household. While this seems contrary to anecdotal and media-reported evidence of a growing number of households in which both husband and wife work, it should also be recalled that the number of single person and single parent households has grown considerably in the last decade too. The trend to declining labour force per household is not unique to Vancouver. However, this decline has been greater in Vancouver than in surrounding suburban areas. There are significantly more wage earners per household in the suburbs than in Vancouver.

2. Current Situation in the Core

The history of employment, labour force, and population growth in Vancouver and surrounding suburban communities has produced a situation in which core employees reside in locations widely dispersed and distant from their place of work. Figure 4 illustrates the geographic distribution of core employees by residential location, using 1971 Census data (the most recently available). It shows that the number of core employees residing in an area declines the farther that area is from the core. Nevertheless, commuting to the core occurred from as far away as Langley and Maple Ridge.

It is estimated that 35 percent of core employees commute to their jobs from homes outside the city, as shown in Table 1. About 30 percent of core employees live in the city but outside the core. Finally, an estimated 35 percent of workers in the core also live in the core. (Note: Appendix I offers a more complete discussion of the residential location of core employees.)

Figure 4. Core Employees by Place of Residence, 1971 (1)



(1) Data which were used to prepare this map are from special tabulations of 1971 Census data obtained by the City Planning Department and the GVRD Planning Department. Because of respondent errors, the data undercount employment by about 16 percent. A further limitation of data reported here is that, given their aggregated nature, the boundaries for the core do not coincide exactly with those used in Coreplan studies.

Table 1. Core Employees by Place of Residence, 1981 (Estimated)

Place of Residence	Employees	Percent
Peninsula	18 740	11.6
Rest of Core	37 350	23.2
Total Core	(56 090)	34.8
Rest of City	47 880	29.7
Total City	(103 970)	64.6
Rest of CMA	57 030	35.4
Total CMA	161 000	100.0

The evidence indicates that about 1 in 3 core employees commutes from a home outside the city. There are two significant consequences of this geographic arrangement of jobs and workers. First, there will be a considerable amount of commuting or journey-to-work travel between the core and suburban residential areas. Second, insofar as core employees might prefer to live closer to their jobs, their demand for housing will exert some effect on housing in Vancouver. The travel and transportation implications of this pattern of concentrated employment and dispersed labour force are the subject of another Coreplan background report, Core Growth and Downtown Peninsula Accessibility.

During the last decade, Vancouver has seen substantial growth in the demand for housing. This new demand has had two principal sources: the formation of new households by members of the baby boom generation, most of whom became adults in the late sixties and throughout the seventies, and increasing migration to Vancouver, partly in response to new office job opportunities.

With downtown employment growth, significant housing demand has focused on areas of the city in or near the core. About two-thirds of the people who work in the core live in the city of Vancouver, and a substantial portion of the remainder would probably live here if they could afford it. Comparing units of like size and qulatiy, the city of Vancouver has the highest housing prices in the Lower Mainland, and most of that price difference can be directly attributed to the advantages of a location in or near the centre of the metropolitan area.

While demand growth has accelerated over the past fifteen years of so, new housing in the city of Vancouver has been supplied at the

same rate as throughout the fifties, a time of relative stability. Recent housing growth in the city has seldom exceeded the pre-1960 high of about 2 500 units per year. A peak of about 5 000 units per year was achieved in 1965 and 1966, during the heyday of West End redevelopment, but has not been approached since, even with high housing demand and with the substantial redevelopment of Fairview Slopes, False Creek South, and Champlain Heights.

The last decade has been plagued by recurrent "housing crises", periods during which potential housing consumers seemed to significantly exceed the available housing supply. Vacancy rates in the rental stock approached zero, and buyer competition greatly bid up the price of both owner-occupied and rental property. Many households found it extremely diffult to find and to afford housing. Table 2, which shows apartment vacancy rates since the mid-1960s, identifies housing crises in the late 1960s, the mid-1970s, and in more recent years. After some brief and relative stability in 1977 and 1978, apartment vacancies plunged to record lows -- so low that there were virtually no vacancies at all. Between 1979 and 1981, housing prices rose dramatically, reaching an all-time high and the highest in the country. Only with the recent downturn in the economy has Vancouver achieved acceptable vacancy rates, accompanied by a decline in previously inflated housing prices. However, when economic recovery occurs, another round of price increases is likely.

Let us briefly consider the causes of housing cost inflation. Economic growth raises the incomes of some people and this increases what they can afford to pay for housing. Economic growth also increases the number of jobs and, by attracting population from other places, increases the amount of housing required. This is generally what happened in the province and the region between 1978 and 1981. Now, if the amount of housing grows sufficiently to accommodate new demand, housing prices generally rise at a rate similar to increases in other costs of living. However, if the supply of housing grows less than is required to accommodate increased demand, housing prices will escalate more rapidly than other prices. This is generally what happened in Vancouver. It should be kept in mind that we are speaking in relative terms here because housing cost inflation has also been fuelled by other factors over the years (e.g., revised Federal income tax legislation in the early 1970s made a home the best investment a household could make).

3. Existing Plans and Policies

The situation and issues described above have been addressed by City policies. The City's overall strategy for managing growth and change is implicit in the many plans and policies adopted during the

Table 2. Apartment Vacancy Rates, 1963-1981 (1)

Survey Date		Vancouver City	Vancouver Metropolitan Area
1963	June	3.7	4.2
1964	June	4.3	4.8
1965	June	4.1	4.0
1966	May	1.6	1.5
1967	June	1.0	1.0
1968	June	1.1	1.3
1969	June	0.8*	1.2
	Dec.	0.7*	0.8*
1970	June	2.1	2.7
	Dec.	1.7	2.1
1971	June	3.7	4.1
	Dec.	2.1	2.8
1972	June	1.9	2.4
	Dec.	0.4*	0.6*
1973	June	0.6*	1.0
	Dec.	0.2*	0.4*
1974	June	0.2*	0.3*
	Dec.	0.0*	0.1*
1975	April	0.1*	0.2*
	Oct.	0.1*	0.1*
1976	April	0.2*	0.4*
	Oct.	0.5*	0.7*
1977	April	1.1	1.6
	Oct.	1.0	1.6
1978	April	1.2	1.5
	Oct.	1.1	1.7
1979	April	0.8*	0.9*
	Oct.	0.2*	0.2*
1980	April	0.1*	0.1*
	Oct.	0.0*	0.1*
1981	April	0.0*	0.1*
	Oct.	0.0*	0.1*
1982	April	0.2*	0.6*
	Oct.	1.2	1.9
1983	April		

1. Vacancy rates (%) in privately-owned apartment structures of six or more units, and constructed at least six months before the survey. "*" indicates vacancy rates less than 1.0 percent.

Source: Canada Mortgage and Housing Corporation, Rental Apartment Vacancy Survey for Metroplitan Vancouver, bi-annual

mid-1970s, together with the City's support of the GVRD's Livable Region Program. The fundamental elements of this strategy are:

a) to maintain and enhance downtown Vancouver as the growing centre of a growing metropolitan region, but while moderating core office construction and employment concentration so as to reduce growth in transportation demand and so as to support regional development objectives;

b) to encourage more residential opportunities in and close to the downtown, but while stabilizing and conserving the character of existing inner-city neighbourhoods;

c) to accommodate the regional transportation requirements of core growth through rapid transit, accompanied by the improvement of local traffic circulation within the core;

d) to improve the quality of the core environment by seeking higher standard development and improved public and private amenities, but while minimizing City expendiutres on new facilities and services; and

e) to minimize change in most areas of the city outside the core.

City housing policies, adopted as part of or in addition to the many core area plans and policies of the mid-1970s, had three principal objectives:

a) to balance core employment growth with increased opportunity for core employees to live close to work, thus reducing potential travel demand;

b) to redress a persistent housing shortage and affordability problem; and

c) to stabilize and preserve the character of residential neighbourhoods in the core.

In pursuit of these ends, a number of actions were taken:

a) Housing was made a permitted use throughout the downtown development district and encouraged in some sub-areas through a floor-space bonus.

b) Zoning for most of the decaying and obsolete industrial areas surrounding False Creek was changed to favour residential as a dominant use, and the City itself initiated development on the south shore.

c) As on City-owned housing sites throughout the city, some False Creek land costs were subsidized through discounts on market price to permit non-market housing and to encourage a socio-economic mix.

d) New zoning schedules were put in place for the core residential areas of Kitsilano, Fairview Slopes, the West End, the Downtown Eastside, and parts of Mount Pleasant and Grandview-Woodland. These were designed to permit residential redevelopment but with some preservation of neighbourhood character.

e) Neighbourhood stabilization was further encouraged by federally-funded neighbourhood improvement programs in Strathcona, Kitsilano, the Downtown Eastside, Grandview-Woodland, and part of Mount Pleasant.

f) Neighbourhood improvement was accompanied by federally-funded housing rehabilitation loans and grants.

Outside the core, City policy has changed little since the 1956 zoning by-law. Most areas have retained their designation as single-family residential areas, and redevelopment has been allowed to proceed in terms of infill and unit-for-unit replacement. Exceptions include the development of Champlain Heights, some isolated apartment zoning, and some neighbourhood improvement in Cedar Cottage.

Six or seven years have passed since the various components of the City's overall development strategy for the core were adopted. Not all of the expected results have materialized so far. The rate of office space construction in the core has increased, progress on rapid transit has been difficult and slow, and residential development in the core has remained low.

The results of the City's housing strategy have been mixed:

a) While there have been minor problems, False Creek South is generally acknowledged to be a success. The City has created a livable medium-density community within close proximity to Vancouver's major employment centre and with a socio-economically diverse population.

b) Developers have been slow to respond to housing opportunities on the downtown peninsula. Only in the last couple of years has there been an interest in downtown housing, and the potential for housing on False Creek's north shore went unfulfilled until the provincial government's recent B.C. Place proposal.

c) While there has been construction of about 3 500 new housing units on the downtown peninsula since 1976, demolitions have resulted in a net addition to the peninsula housing stock of less than half that number. Consequently, between 1976 and 1981, downtown peninsula population rose only slightly to about 36 000. This is 26 000 or 42 percent short of the population anticipated in the studies leading to the 1975 downtown plan.

d) Throughout the remainder of the core, considerable redevelopment has occurred, but net units added have been about two-thirds of total construction activity. Redevelopment has resulted in considerable change in neighbourhood socio-economic character, if not in physical characteristics.

In spite of development and redevelopment, Vancouver has continued until recently to be plagued by a persistent housing shortage and commuter travel from outlying suburbs has continued to grow.

4. Concern

The preceding analysis raises considerable doubt about the effectiveness of the City's overall development strategy in general, and its housing policies in particular. The strategy seems ineffective in obtaining a more balanced growth in office space, housing, and transportation system capacity. Consequently, growth in employment, resident labour force, and commuter travel is uneven, and more transportation system capacity is required today than would be the case if the city's strategy had been more successful.

The GVRD's Livable Region Program has also met with little success. A central objective of this program is to promote a balance of jobs to population in each part of the region. Such a balance would cut down on commuting time and travel costs. It would also minimize the capital and operating cost of new or expanded transportation facilities and services.

According to the GVRD Planning Department, the balance of jobs to labour force in each part of the region became worse during the 1970s rather than better:

> There has been substantial employment growth in the the region and the economy remains strong. Considerable effort has been made to encourage the location of jobs in the outer municipalities where the labour force has increased even more rapidly. Rather than a more balanced ratio of resident workers to jobs as postulated by the Livable Region Program's managed

> growth scenario, the ratio appears to have become more unbalanced. The net result has been to reinforce the commuter pattern into the central municipalities and to increase traffic congestion and the need for transportation facilities. (Source: The Livable Region: From the 70s to the 80s, GVRD Planning Department, September, 1980, p. 11.)

Vancouver's role in this regional program is to support the deflection of employment growth in its core to Regional Town Centres and to encourage residential development that would accommodate a greater resident labour force in the core and the rest of the city.

The prospects for encouraging residential development are not encouraging. It is estimated that residential and mixed-use zoning in Vancouver allow development and redevelopment to a maximum of about 210 000 housing untis. The present level of development is about 175 000 units, so there is room to add, at most, another 35 000 units to the city's housing stock. If housing development continues at the same annual rate which has prevailed over the last thirty years, this potential will be used up within the next two decades. However, as some of the zoned potential will be increasingly hard to develop and much of the mixed-use zoning may go to higher-order uses, residential development opportunities might very well be exhausted before the end of the eighties.

The rest of the metropolitan area could fare little better. If development proceeds at the same average densities that presently prevail, and at the same rate as was observed over the last decade, then the metropolitan area could exhaust its urban land supply in about twenty years.

Density increases and a decline in demand could extend that period considerably, but land for housing in metropolitan Vancouver will still be a very scarce resource. Constrained by the sea to the west, the mountains to the north, and the border to the south, and squeezed by the Agricultural Land Reserve, room to grow in Vancouver will be at a premium. Further, the distribution of most growth opportunities in distant eastern suburbs could place a considerable commuting burden on residents and impose large transportation capital expenditure burdens on taxpayers.

The effects of a growing housing demand on a limited housing supply will be obvious and unpleasant. Because housing goes to those people who are able and willing to pay the highest prices, those who cannot afford those prices will be displaced. As rent increases and the demolition of modest-priced homes reduce the amount of affordable housing, the city's low-income residents, and more and more of its middle-income residents, will get squeezed out of the housing market, and out of the city.

Increased housing opportunities in the city are urgently needed if these concerns about continued employment growth in Vancouver's core are to be addressed. Alternatively, employment growth could be more concertedly redirected to Regional Town Centres, more accessible to suburban labour pools. Or, the beneficiaries of continued growth in the core could be taxed to provide the necessary improvements for maintaining the core's accessibility. The remainder of this report examines more closely the nature and magnitude of housing problems which could result from the continued concentration of metropolitan employment growth in Vancouver's core.

PART B: PROSPECTS

In these last decades of the 20th century, we are witnessing the accelerated transformation of the economy and society and entering a post-industrial age. This transformation is characterized by a dramatic growth in what economists call the tertiary (service) and quaternary (information and decision-making) sectors of the economy. Correspondingly, there is decline in the primary (agricultural and resource-extraction) and secondary (industrial) sectors.

In downtown Vancouver and surrounding inner-city areas this transformation is reflected in land use changes and the changing appearance of the cityscape. It is also manifested in the rising amount and changing composition of employment. Change and growth in employment have important implications for transportation and housing. Given that the supply of transportation capacity is costly, and the supply of housing is constrained by zoning, increased travel demands and housing demands generated by employment growth will have significant effects on transporatation service and housing affordability. In this section, prospects for growth in employment, housing demand, housing supply, and labour force are examined using 20-year projections. This examination reveals that considerable excess housing demand can be anticipated, given current trends and existing City plans and policies.

1. Future Core Employment Growth

There were an estimated 161,000 employees in Vancouver's core at the end of 1981. In the Coreplan background report, The Core Employment Trend, two projections were made of future employment growth in the core. Anywhere from about 50,000 (LOW Scenario) to around 100,000 workers (HIGH Scenario) could be added to total core employment over the next two decades. This growth represents an increase in present employment ranging between 30 and 65 percent.

These employment growth prospects might seem optimistic. Two brief comments can be made about this. First, our purpose is not to forecast what will happen or to guess the future but to project plausible futures in order to examine their implications and consequences. There are too many uncertainties to make forecasts with any confidence, and besides it is hoped that public decision-makers would intervene and alter the situation long before the end of the projection period.

Second, the projections might be somewhat optimistic insofar as the trend data used to make our office space and employment projections precede the recent downturn in commercial development

activity accompanying the economy's recession. This is not a serious handicap however. Given the many favourable prognoses for long-term economic prosperity in British Columbia and the Lower Mainland, and given the high rate of office growth in Vancouver which has accompanied provincial prosperity in the past, there is nothing improbable about the projections reported above.

It is not only future economic circumstances that are uncertain, but so are fast-paced technological advances in office automation and telecommunications. These could reduce the need for geographically-concentrated and/or labour-intensive offices. There is nothing but guesswork about when these anticipated circumstances could moderate the regional demand for office space in Vancouver's core and/or the amount of office space per employee.

There is no question that future economic and technological conditions could make the future of office space and employment in Vancouver's core different from what is projected here. This is a hazard in any enterprise like ours and only a monitoring program operating alongside any policy implementation flowing from this exercise can guard against inappropriate public interventions.

Even with this uncertainty projections remain useful. What the projections are intended to do is to provide a picture of what might be anticipated if things continue as they have in the past and if nothing is done to alter trends. This can assist public decisions to be made about whether or not a trend is desirable and about the actions which could be taken to produce a more acceptable future.

The LOW scenario anticipates an employment level in 2001 that the HIGH scenario anticipates for 1991. The actual dates are less significant than the comparison we seek to make between things that are growing at different rates. In other words, this Part B will not conclude with observations suggesting what might be the case in the year 2001. Instead, it will conclude with observations suggesting that when employment volumes grow at given rates and reach given amounts we might also expect some predictable housing and travel consequences.

2. Future Housing Demand

Growth in employment implies growth in labour force. That is, additional jobs require additional workers. If core employment growth does not occur at the expense of employment in other parts of the metropolitan area and if there is not a large pool of unemployed workers, labour force growth will be needed to fill new jobs in the core.

Labour force growth generally occurs through in-migration from

other areas, increased labour force participation (e.g. the trend in the last decade of increased numbers of working women), and maturation of the school-age population (i.e. young people entering the labour force for the first time). Of course, some in-migration is counter-balanced by out-migration, and first-time labour force entrants are in part offset by retirees and other withdrawals.

In whatever ways that labour force growth takes place, it can be expected that it will generate a demand for housing. There will be housing demand by households relocating in the Vancouver area from other places, residents forming a household for the first time (e.g. a young person in his or her first job and leaving the family home), and residents forming a new household (e.g. recently divorced women re-entering the labour force). Meanwhile, housing will become available as new dwelling units are added to the housing stock (but minus demolitions), as households are dissolved (e.g. through death or "doubling up"), and as some households move from the Vancouver area to other places.

Given projections of future employment in the core, housing demand generated by employment growth was estimated on the basis of the average number of workers per dwelling (see Appendix II for details). Figure 5 presents projections of future housing demand generated by projected employment growth in the core. The housing demand of core employees in 1981 is estimated to be 137 600 dwellings. In the LOW projection, this demand would grow by 42 700 dwellings, or 31 percent, between 1981 and 2001. In the HIGH projection, the housing demand of core employees would grow by about 85 500, or 62 percent.

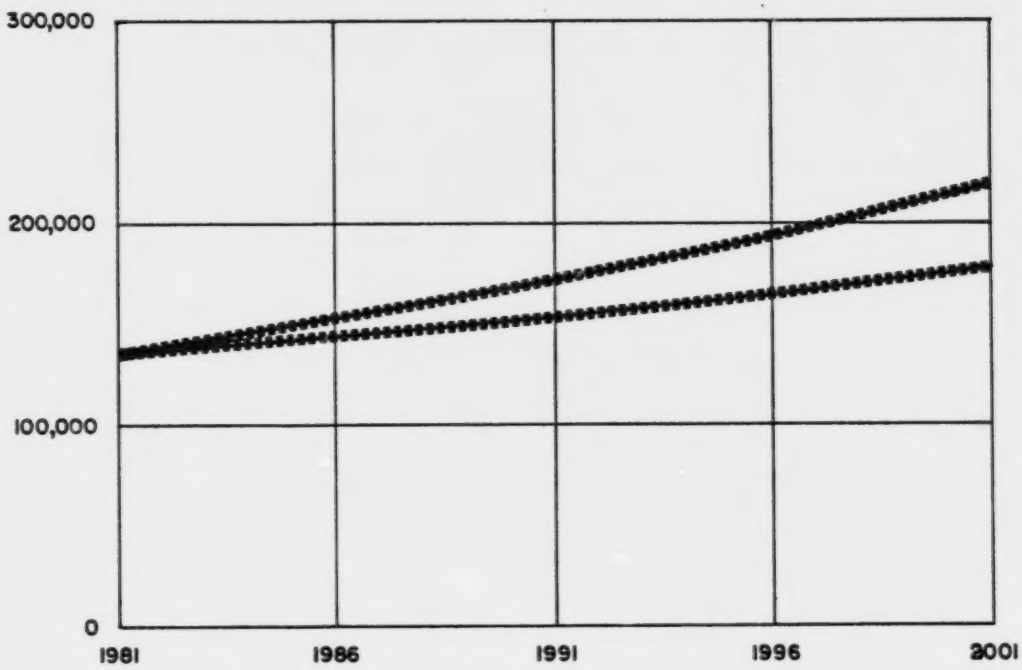
For purposes of comparison, the housing demand of workers employed in the core in 1981 represents about 78 percent of the city's existing stock of 176 000 dwellings. The demand for 43 000 to 86 000 additional dwellings represents about 24 and 49 percent, respectively, of the city's current housing stock.

The average number of workers per dwelling (WPD) used for these housing demand projections is 1.17 (see Appendix II). This is a ratio formed by dividing employed labour force by total occupied dwellings or households -- including those without wage-earners. The ratio is an average for core employees, using 1971 and 1976 data, and its value actually ranges between 0.89 for downtown peninsula residents to 1.31 for suburban residents.

The procedure employed in making housing demand projections is highly simplified. First, WPD is assumed to be constant over the projection period. Second, variables which affect housing demand (e.g. incomes, mortgage rates, non-housing living costs) are

ignored. This approach is consistent with that used in all Coreplan projections generally: key variables (or relationships between them) are projected to change at rates determined by observable trends. Where trends are uncertain or not discernible, variables (or relationships between them) are held constant.

Figure 5. Projected Housing Demand of Core Employees, 1981-2001



Finally, it should be noted that the projections are for the housing demand of core employees. No attempt has been made in this analysis to anticipate new housing demand generated by employment growth in the rest of the city (which has about 84 percent as many jobs as the core), by other sources (e.g. in-migration of retired or other non-working population), or by other factors (e.g. federal tax legislation further favouring home ownership over other investment alternatives). The subject of other housing demand is treated once again and more closely in a few pages.

3. Location Preference of Housing Demand

Not everyone who works in Vancouver wants to live here. Many prefer and do live in suburban communities, for various reasons apart from lower housing costs. At present it is estimated that 1 out of every 3 core employees resides outside Vancouver.

In theoretical terms, the distribution of core employees among the various communities in metropolitan Vancouver (as illustrated in Figure 4 earlier) will depend on the number of workers requiring housing, their income, the price of housing, other living costs, and their tastes and preferences (e.g. for size, type, and location of housing). Whatever these terms are, the only real evidence we have to go by is the 1971 place-of-residence distribution as shown and discussed with reference to Table 1 earlier (see Appendix I for details about the data and methodology used; see Table 4 in particular).

For the purposes of this study, it will be assumed that the locational preferences of additional core employees will be like those of core employees in 1971. That is, 2 out of every 3 will want to live in Vancouver. Accordingly, as shown in Table 3, it is estimated that about 35 percent of additional core employees would live in the core, 30 percent in the rest of the city, and 35 percent outside the city.

Table 3. Additional Core Employees by Place-of-Residence Preference, 1981-2001

	Projection		
	LOW	HIGH	PERCENT
Peninsula	5 800	11 600	11.6
Rest of Core	11 600	23 200	23.2
Total Core	17 400	34 800	34.8
Rest of City	14 900	29 800	29.8
Total City	32 300	64 600	64.6
Rest of CMA	17 700	35 400	35.4
Total CMA	50 000	100 000	100.0

This place-of-residence projection of future employment growth is based on 1971 Census place-of-work/place-of-residence data. It is consequently subject to all the limitations of that data (as reported in Appendix I). The greatest problem posed by the use of 1971 evidence is its validity for 1981 and for the next two decades. Is it still the case that 65 percent of core employees both prefer and are able to afford to live somewhere in the city, while 35 percent have a preference for or can only afford a home

outside the city? Will these propensities remain unchanged over the next twenty years? Until 1981 Census place-of-work/place-of-residence data become available, answers to these questions must remain speculative.

It was projected earlier that 43 000 (LOW) to 86 700 (HIGH) dwellings would be required to accommodate the 50 000 to 100 000 additional employees anticipated in the core over the next two decades. Table 4, shows the location of these required dwellings, based on the employee distribution in Table 3.

Table 4. Geographic Location of Housing Demand Generated by Additional Core Employees, 1981-2001

	Projection		
	LOW	HIGH	PERCENT
Peninsula	5 000	9 900	11.6%
Rest of Core	9 900	19 800	23.2
Total Core	14 900	29 700	34.8
Rest of City	12 700	25 500	29.8
Total City	27 600	55 200	64.6
Rest of CMA	15 100	30 300	35.4
Total CMA	42 700	85 500	100.0

About 55 000 additional dwellings would be needed in the city over the next two decades, in the HIGH growth scenario, to accommodate the 65 000 projected new core employees who would want to live in the city. In the LOW scenario, about 28 000 dwellings would be needed to accommodate 32 500 employees in the city.

4. Housing Supply Prospects

The projections of housing demand generated by future employment growth in Vancouver's core, as shown in Table 4, do not suggest where future core employees might actually live. They simply describe the amount and location of housing that future core employees might prefer (based on the characteristics of the effective housing demand of core employees in 1971). How many future core employees might reside in Vancouver further depends on future housing supply: the amount of housing available in various parts of the metropolitan area, its characteristics, and its price.

In preceding discussion it was suggested that the city's housing stock has grown too slowly over the last decade to continue to accommodate 2 out of every 3 core employees. There are two reasons for concern about what might happen over the next decade or two. First, the housing stock will quite likely expand more slowly. Second, employment could grow at a higher rate than in the past decade. In either case, a growing proportion of core employees would have to commute to work from locations outside the city. Much depends on how the city's housing stock will grow and change over the next two decades.

During the last three decades, 72 000 dwelling units were added to the stock of housing in the city, or an annual average of 2 400 dwellings (see Figure 3 earlier). About 17 000 units were added in the 1950's, 35 000 in the 1960's, and 20 000 in the 1970's. A linear extrapolation of this 30-year trend suggests that about 50 000 units might be added to the stock over the next two decades. However, remaining residential development potential under the City's present zoning regulations is too limited to accommodate this trend growth in the city's housing stock.

It has been estimated that there is a potential for 35 000 additional housing units in the city, a 20 percent increase in the present stock (see Appendix III for more details). This is a net potential, involving the demolition of 11 000 dwellings on under-utilized sites followed by the construction of 46 000 new dwellings. It should also be noted that this estimate optimistically includes about 7 000 units in the downtown area but makes provision for no more than 4 500 units on the north shore of False Creek, as permitted by present zoning regulations. B.C. Place has since proposed 10 000 to 12 000 housing units there.

There is presently not enough housing potential in the city to allow the same rate of residential development activity over the next two decades as was observed during the 1970's, as shown in Table 5. Given the disparity between housing potential and the development trend (projected net additions), housing potential will very likely constrain and thereby determine the location and maximum quantity of additional housing.

Table 5 further reveals that the location of the city's remaining housing potential does not correspond with the locations of residential development activity in the last decade. Under existing zoning there is far more potential on the downtown peninsula than the volume indicated by the residential development trend, and far less potential in the rest of the city than the trend volume. This situation suggests that builder and developer attention will have to turn to development opportunities in the

Table 5. Residential Development Potential and Development Trend, 1980-2001

	Development Potential	Development Trend	Potential - Trend
Peninsula	13 300	6 200	7 100
Rest of Core	16 400	17 000	-600
Total Core	29 700	23 200	6 500
Rest of City	5 300	17 100	-11 800
Total City	35 000	40 300	-5 300

downtown, such as the Downtown South area (east of Granville and south of Robson). However, as noted earlier, economic and related factors appear to have so far stifled any enthusiasm for these opportunities. There is some doubt too that there is much demand for more high-density, high-priced housing.

5. Excess Housing Demand

If the city's limited residential development potential, under existing zoning regulations, were to be fully utilized over the next two decades and 35 000 dwellings added to the housing stock, there would be an inadequate new supply of housing to meet the demand for city housing generated by core employment growth. In the LOW projection of housing demand, about 28 000 dwellings would be required for additional core employees who want to live in the city (see Table 4, earlier). In the HIGH projection about 55 000 dwellings would be required.

It might seem as though there would be sufficient growth in the housing stock to meet new housing demand in the LOW projection. However, it should be kept in mind that there are sources of new housing demand in addition to core employment growth. In 1971 about 50 percent of the city's housing stock accommodated people who worked in the core (see Appendix I, Table 4). Accordingly, it will be assumed that additional core employees will be able to assert an effective demand for 50 percent of the new housing supply.

This is a very conservative assumption to make for it is not anticipated that there will be employment growth outside the core and within the city of similar proportions to core employment growth. However, a great deal of analytical work would be necessary

to more adequately anticipate total housing demand, and the share of that demand that would be generated by core employment growth. Therefore, it should be acknowledged that with no growth in housing demand from other sources, the city housing demand generated in the LOW projection of core employment growth could very likely be met by new supply.

If additional core employees, in either the LOW or HIGH projection of core employment growth, effectively obtain about 50 percent of new housing in the city, it means that 17 500 new dwellings will accommodate about 20 500 new core employees. As determined from Table 6 this represents 41 percent of core employment growth in the LOW projection, and 63 percent of all those who will prefer to live in the city. Corresponding figures in the HIGH projection are 20 and 32 percent.

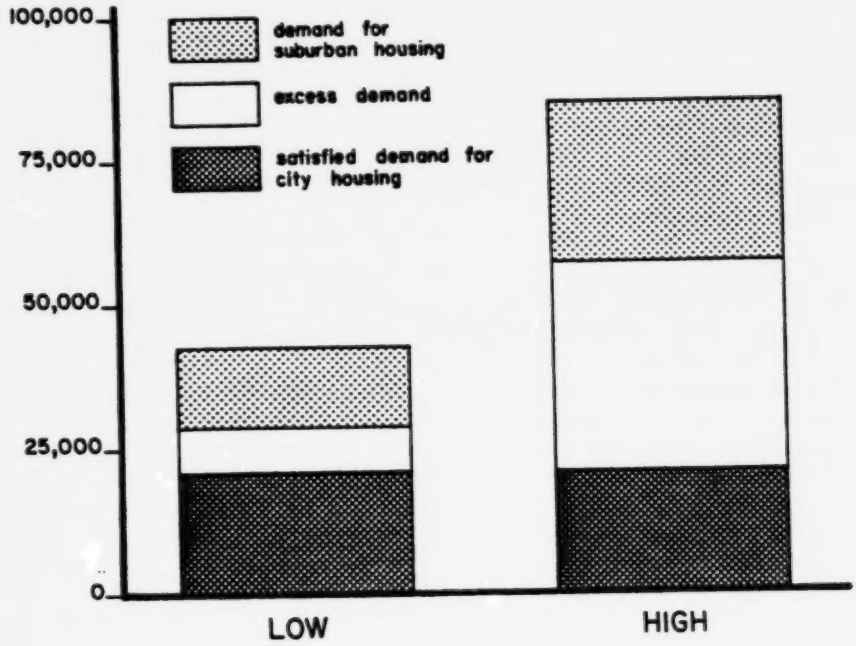
Table 6. Housing Supply and Demand, Core Employment Growth, 1981-2001

	LOW		HIGH	
	Workers	Dwellings(1)	Workers	Dwellings
Demand for City Housing (a)	32 300	27 600	64 600	55 200
Supply of City Housing (b)	20 500	17 500	20 500	17 500
Excess Demand (a-b)	11 800	10 100	44 100	37 700
Demand for Suburban Housing	17 700	15 100	35 500	30 300
Total Suburban Demand (2)	29 500	25 400	79 600	68 000
Total Demand (3)	50 000	42 700	100 000	85 500

(1) 1.17 workers per dwelling
(2) excess demand for city housing plus demand for suburban housing
(3) demand for city housing and demand for suburban housing

In the LOW projection of core employment growth and housing demand, about 10 000 households, representing about 12 000 workers, would not be able to obtain housing in the city as they preferred. In the HIGH projection, about 38 900 new households, representing about 44 000 workers, would need to locate in suburban areas in addition to those preferring suburban housing to begin with. Figure 6 shows the increased demand for suburban housing in these circumstances.

Figure 6. Projected Excess Housing Demand, 1981-2001



These prospects can only mean higher house prices, continuing low apartment vacancy rates, displacement of low-income residents, reduced housing opportunity for everyone, more commuting from the suburbs, and larger tax bills to pay for regional transportation system improvements. The following section of the report identifies and examines these many implications of excess housing demand.

PART C: PROBLEMS

Each of us requires a place to live. For most of us housing is the most expensive single item among our living expenses. And for most homeowners among us, housing is our biggest and probably only major investment. These features of housing, coupled with the fact that more land in urban areas is used for residential purposes than for any other use, in large part explains why housing is of fundamental and continuing concern to most taxpayers and their elected representatives.

In the last section of Part B, excess housing demand was anticipated to ensue from trend employment growth in Vancouver's core, given limited housing potential in the city. The objective of this part of the report is to identify and describe the housing and related problems generated in these circumstances. This involves two tasks: (1) an examination of how the housing market, or housing consumers and providers acting in the aggregate, might respond to excess housing demand, and (2) an exploration of how housing consumers might be individually affected by these housing market operations. These are followed by a brief discussion of travel implications. Part C concludes with an overall evaluation of the problems identified below.

1. Housing Market Effects of Core Employment Growth

People obtain their housing from the housing market. This market is obviously not a store where residential accommodation is purchased. It is a concept signifying the interaction of housing demanders and suppliers. This interaction generates housing prices and rents, distributes population among available dwelling units, stimulates (or cools) new construction, and so on. By "housing demand" is meant the number of dwellings, by price or rent level, size, location, type, etc., that a given number of people are willing and able to buy or rent at a given point in time. "Housing supply" is the number of dwellings, by price or rent level, etc. available at a given point in time. These two concepts are somewhat abstract but most everyone is familiar with the two central economic forces they represent.

The operation of the housing market consists of interaction between demand and supply — an ongoing adjustment between people and the housing they occupy. Given their incomes and assets, and given the current prices or rents of accommodation, people sort themselves into the available stock of dwellings. Given their changing costs and revenues, the owners of housing -- both landlords and home owners -- will adjust the availability of housing. With changing preferences and incomes, and the changing availability of

housing, housing consumers will alter their demand. So too will housing producers, or builders and developers, alter and expand the stock of housing in response to changes in the number, preferences, and/or incomes of housing consumers (including investors or landlords).

Excess housing supply occurs as a result of overbuilding by housing producers, or a decrease in the number and/or incomes of housing consumers. Far more frequent in growing urban areas is excess housing demand. It means that more housing is demanded, at current rents and prices, than the amount of housing generally available. The immediate or short-run result is that vacancies in both owned and rental stock diminish, and rents and prices begin to rise. These results generally signal housing producers and investors to construct and provide more housing (assuming, however, that the costs of producing more housing are not rising faster than revenues are anticipated to rise).

Excess demand can become a recurrent and ever-worsening feature of the housing market if there is an absolute limit to housing supply. Vancouver's potential for an estimated 35 000 additional dwellings (net), allowing a 20 percent increase in the size of the existing stock, represents such a limit. As this limit is approached, the scarcity value of remaining developable sites, or sites redevelopable to a higher density, increases. This raises the cost of new housing.

With many potential homeowners and renters competing for limited housing opportunities, it is those with the highest income and/or the greatest assets who will afford to claim new housing opportunities. Their effective demand will give them the housing they want. What they don't want will go to those at the next highest level of income. What these people don't want becomes available to those with still lower incomes, and so on. Ultimately, most people will be priced out of the market in new houses.

Excess housing demand at this point, but usually sooner, affects existing housing. If more new or additional housing is demanded in the city than is readily available, consumers in search of housing will turn to existing housing which meets their needs and, if they can afford it, will pay more for it than it has been worth until then. And so, as in the market for new housing, existing housing is allocated according to its value to those who can afford it. The end result of steadily growing housing demand in Vancouver is to steadily push up housing prices and rents, because the quantity of housing demanded exceeds the quantity of housing supplied. Unmet demand must be satisfied through doubling up, i.e. less housing per person, or housing located farther away than might be preferred, e.g., in the suburbs.

To summarize, future employment growth in the core will have the effect of pushing up housing prices and rents in the city. This will be due mainly to (a) the housing stock expanding ever more slowly and expensively as the potential for housing, established by zoning, shrinks, and (b) the quantity of housing demanded growing more rapidly than housing supply.

2. Consequences of Excess Housing Demand for Housing Consumers

Excess housing demand will affect different households in different ways. If they do not yet live in Vancouver but want to, or if they already live here but want a different place, they will be affected more adversely than households that are basically satisfied with their current accommodation. If they do not own their own home, they will be affected more adversely than those who do. Finally, the lower their income, the harsher will be the effects of decreasing housing opportunity.

In a situation where housing in the city is in short supply relative to the number of households who would like to live here, potential new residents or city residents who want different accommodation will confront limited housing opportunity. Apartment vacancies are likely to be very few in number, particularly if affordable rental accommodation is demolished to make way for higher-density, and more luxurious ownership housing. Listings of homes for sale may be nominally greater than in a normal market, but effectively there are likely to be fewer. Many homes may not be put on the market and held on to for a greater capital gain at a later resale time. Counterbalancing this, many homes might be listed for sale at higher than market value in the hopes of reaping a substantial gain. The combined result is fewer listings of homes at current market value.

Lower vacancy rates and fewer listings than prevail in a normal market would shrink the diversity of dwelling types and locations which a household could choose from. This would have serious impact on households with an urgent need for housing (e.g. as the result of a job transfer from another city or eviction from rental accommodation in the city), with special housing needs (e.g. the handicapped, elderly, or families with children), or with low income and/or limited assets for down-payment purposes.

The great majority of city residents would not be confronted so directly by limited housing choice. However, excess housing demand would not leave them untouched. Tenants would be most obviously affected. Whether they rent an apartment or a home, tenants could expect steady rent increases in a market characterized by lower vacancies. When demand exceeds supply, the profit motive in most

enterpreneurs will make them raise the price of a commodity so that the quantity demanded more or less equals its supply.

It is pertinent here to briefly describe a landlord's situation when there is excess housing demand. It is not only profit motive that gives rents a propensity to rise. Property taxes also play a significant role as do financial considerations. The property tax system in this province is such that property values are determined annually on the basis of market sales. Properties are then taxed by municipalities on the basis of assessed market value. Mortgage amounts are also determined on a similar basis. Depending on interest rates, rising market values for income property generally mean rising property revenue. A landlord thus has three factors which might motivate rent increases: low vacancy rates, rising property value, and increased taxes.

Of special interest are those properties not developed to the maximum use and highest density of land use allowed by zoning. In a city like Vancouver, most properties are centrally located relative to properties in outlying suburbs. They are also typically better served by infrastructure and amenities. Hence, the land value of a property is a far greater component of total property value (land plus building) than it is in the suburbs. Increases in property value are generally ascribed to the land component, in other words to location. For two equal-size properties side by side, zoned for the same use and density, the property with just a duplex will have a land value not too different than the property in maximum use with a thirty-unit apartment building on it. It should not be difficult to understand how in these circumstances, excess housing demand not only puts upward pressure on rents but exerts redevelopment pressure on underdeveloped properties. The end result is redevelopment that increases the size of the housing stock but at the cost of a reduction in the supply of affordable rental housing and a displacement of the tenants who occupied it.

It was noted earlier that the city's potential for 35 000 more housing units (net) actually entails the demolition of an estimated 11 000 dwellings, followed by construction of 46 000 new units. This is a normal part of housing market operations in a built-up city: near-obsolete, low-density housing is replaced by modern, higher-density housing. This is something which has already been happening in the city for two decades or more. However, as the city runs out of development potential, more and more of the housing that is demolished is not nearly so obsolete as it once had to be to go under the bulldozer, and more and more of it has densities already quite close to what can be achieved in a new project.

Excess housing demand aggravates this process. It is already

the case that much development involves the demolition of affordable housing and the constructon of luxury accommodation. With excess demand, it is economically feasible for this to occur even when little, if any, net increase in floor area or number of housing units is possible. As housing prices and rents rise what becomes evident is that it is the location of a dwelling rather than its type or characteristics that are gaining in value. Redevelopment activity is a means of capitalizing this increased value. Thus, as core employment grows, residential locations readily accessible to the core rise in value and any affordable housing in these locations is endangered.

Increasingly, too, new residential development means a decrease in rental housing opportunities. A high rate of core employment growth would accelerate the process described here. Not only are tenants vulnerable to displacement due to redevelopment, but a great number are pressured into relocation because of rents rising more than their incomes can bear. The alternative for them is to suffer increased housing costs with less and less income available for other expenditures.

Finally, homeowners too will feel the impacts of excess housing demand. Widespread increases in assessed property values will translate, for some, into higher property taxes. For those households on fixed incomes, this could bring on financial hardship or force the sale of their home. Most homeowners, however, will benefit in the general circumstances described in this section. Non-taxable capital gain will be enjoyed on the sale of their home and until that time ever-growing collateral will be available to them when making a loan for consumption or investment purposes.

To summarize, future employment growth in the core, by generating housing demand in excess of the supply of housing, will have the following effects on housing consumers:

- o households wanting to live in Vancouver or residents seeking different accommodation will have ever more limited housing opportunity to choose from,
- o tenants will face ever-increasing rents, and those living in housing on underdeveloped properties will face the increasing probability of relocation due to redevelopment,
- o homeowners will enjoy ever larger equity gains, and
- o higher and higher incomes will be necessary for tenants and prospective homeowners to maintain an effective demand for housing which meets their needs and preferences.

It is households on lower incomes who will particularly suffer in a housing market beset by rising excess demand. Shrinking housing opportunity will also affect households with special housing needs, such as the handicapped, the elderly, families with children, and, to a lesser extent, two wage-earner families. Their preferences are unlikely to be met concerning housing size, type, characteristics, and/or location. Many of these households also have relatively low incomes and so they will be doubly affected by increasing excess housing demand.

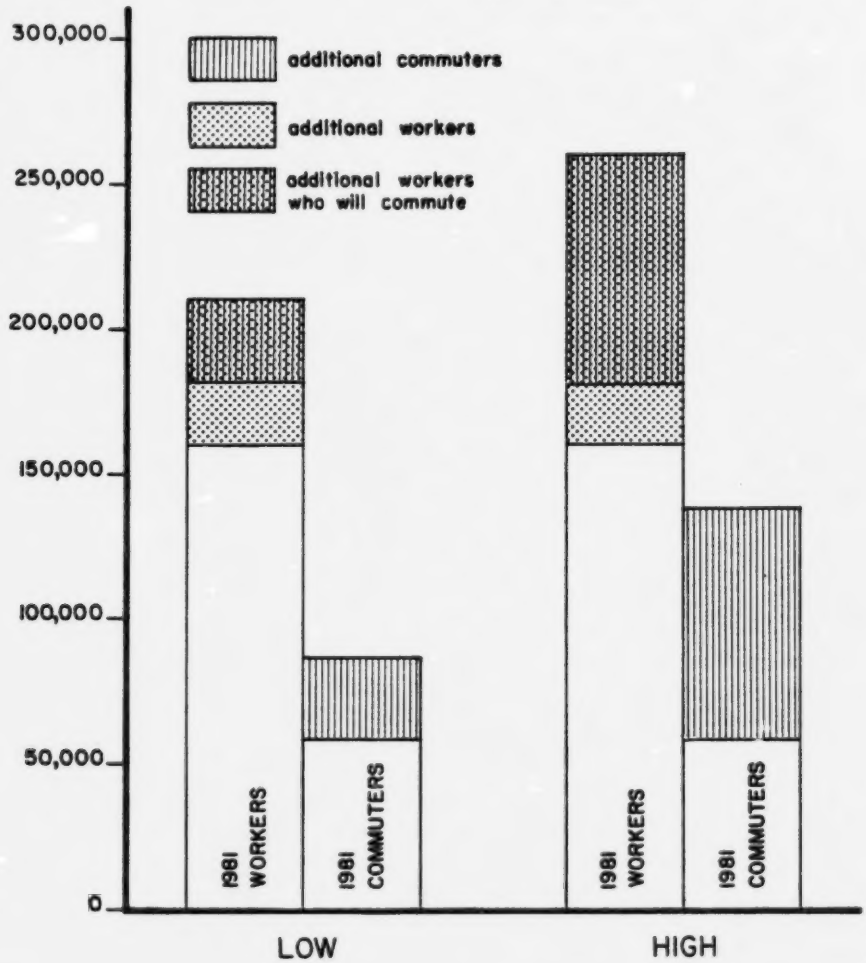
3. The Impact of Excess Housing Demand on Commuter Travel and Vice Versa

On the basis of projections and analyses reported earlier, it is estimated that 41 to 80 percent of new jobs in the core over the next two decades would be filled by workers who commute from homes outside the city. At present it is estimated that about a third of all core employees live outside the city. In the LOW projection, up to 42 percent of all core employees would live outside the city by 2001. In the HIGH projection, this figure would climb to 53 percent. The number of commuting workers would grow by 51 percent in the LOW projection, and 136 percent in the HIGH. These prospects are shown in Figure 7.

Commuter travel will grow quite dramatically according to these prospects -- a subject examined in much greater detail in another Coreplan background report, Core Growth and Accessibility. This increasing commuter travel, plus growth in other kinds of travel, will present a problem because there is not the capactiy in the transportation system, existing or proposed, to accommodate it. For the past fifteen years, there have been no major additions to Vancouver's street system and few improvements in access to the downtown peninsula. Several streets and bridges are already reaching the physical limits of their rush-hour capactiy. ALRT cannot be expected to accommodate very much new travel demand because it is designed primarily to replace part of the bus system. No major improvements in the capactiy of the regional transportation system or in access to the downtown peninsula are planned.

Suffice to say, on the basis of the foregoing, that traffic congestion will increase considerably. Travel time to the core would also increase, whether because of traffic congestion or because of suburban homes located farther and farther away from the core. Public expenditures on transportation systems will be necessary for improvement and expansion. Overall, transportation costs will increase, both public and private, and these costs will mean fewer resources to spend on other desirable public or private goods and services.

Figure 7. Employment and Commuter Travel Growth, 1981-2001



One good or service so affected will be housing. The more that people have to spend on travel the less they will have to spend on housing, assuming that incomes and all other costs remain the same. The same will be true in the public sector. Tax dollars spent on transportation system improvements will not be available for housing programs, for the construction and operation of needed physical and social facilities, and for the provision of physical and social services.

Housing in the city will be affected by commuter travel in other significant ways. First, commuter travel has environmental

impacts. It is already the case that residential neighbourhoods are disrupted by commuter traffic overflowing congested arterials. Controversies over street barricades and traffic diverters have drawn attention to the ways that neighbourhood livability can suffer deterioration from thru traffic. Increased commuter traffic on Vancouver's major arterials can only worsen the situation if the traffic is not accommodated by improved facilities.

Second, if improved and new transportation facilites are provided to handle increasing travel demand, residential neighbourhood environments are likely to be transformed by them. Controversy over the ALRT alignment and argument between an underground versus an overhead route at Broadway and Commercial have drawn attention to the significance of this matter. Whether existing arterials are expanded or new access provided, whether it is the street system which is upgraded or transit, there are bound to be repercussions that will affect environmental quality and livability in areas in which such transportation improvements are made.

Third, commuter travel will also affect the housing market. Growth in this travel will increase congestion, travel delays, travel time, and travel costs. In these circumstances, it will become increasingly desirable for many commuters, and imperative for some, to live in closer proximity to their workplace. We are referring here to the third of core employees who it is estimated live in suburban locations because of preference. If congestion grows, some of these will change their preference and seek housing in Vancouver. This reconsidered housing demand by households which otherwise preferred suburban housing will sustain or swell the excess demand for Vancouver housing described earlier, and exacerbate its effects.

To summarize, excess housing demand will force an ever-growing proportion of core workers to suburban residential locations. This will generate considerable growth in commuter travel which, in turn, will affect housing. By raising the costs of travel and by requiring public expenditures on transportation, it will reduce the resources, both public and private, available for housing. It will exacerbate the disruption of residential neighbourhoods with more overspill thru traffic. It could transform neighbourhoods with new or expanded transportation facilities. Finally, congestion will make centrally located housing ever more desirable and contribute further excess housing demand.

4. Evaluation

Excess housing demand, produced by the interaction of a housing stock with limited potential for expansion and a housing demand

stimulated and increased by employment growth in the core, is likely to result in severely limited housing opportunity for a very large number of households. Ever increasing numbers of them, displaced from Vancouver homes or denied access to them because of ineffective demand, will have little choice but to reside in suburban locations.

The overall result of excess housing demand could very well be the socio-economic transformation of the city's resident population. The current mix of incomes, occupations, lifestyles, educations, and interests will likely be narrowed. The environmental character of many neighbourhoods and the nature of community activities and events in them would also be transformed.

All of these consequences are, by and large, inconsistent with the Goals for Vancouver proposed by the Vancouver City Planning Commission (VCPC) in early 1980 after finding out citizens' opinions and ideas about the future of the city. Attention is drawn here to the two housing goals:

> GOAL 1: Provide a wide variety of housing cost and type to meet the shelter requirements of existing and future Vancouver residents.
>
> GOAL 2: Distribute acceptable housing types and forms within all appropriate areas of Vancouver rather than having them concentrated in a few districts.

The Commission's report observes:

> Public sentiment over the need for new housing is clear. Almost 90% of residents, particularly renters, believe in the importance of housing with a broad range of rents and prices as well as a wide range of housing type. The lack of affordability and variety in the present housing stock was mentioned as to what should change in the city and was also raised as one of the chief reasons to cause citizens to leave their city. (p. 27)

Given existing plans and policies and present trends, citizens' housing goals for the city can only be frustrated . The difficulty of finding and holding on to suitable and affordable housing will become worse rather than better unless the imbalanced growth of employment and housing is corrected.

PART D: OPTIONS

To summarize preceding analysis and discussion, the City confronts a situation in which core employment could grow between 50 000 and 100 000 workers over the next two decades, but the present capacity for additional housing in the city would allow the stock to accommodate as few as 20 000 of these workers. The city's slowly growing housing stock would thus accommodate from 20 to 40 percent of new core employees. This is much less than in recent decades for an estimated two-thirds of core employees live in the city at present .

This imbalance between employment and labour force growth will generate considerable growth in commuter travel. Unless the transportation system is improved, traffic congestion on the access corridors to the city and the downtown peninsula will increase. The imbalance will also generate excess housing demand which will reduce housing availability and affordability. The housing market will meet the needs of an even narrower segment of the population. Not only will this alter the physical and socio-economic character of the city, it will also produce frustration, difficulty, and hardship for those Vancouver households who cannot keep up with ever-rising housing costs.

1. Coping With the Trend

In the first part of this report, the City's implicit overall development strategy for managing growth in the core was briefly described. It was during the mid-1970's that the City last addressed the problems posed by concentrated, high employment growth and declining accessibility. To deal with them, City Councils adopted plans and policies on land use, transportation and related matters. The GVRD's Livable Region Program and plans for a regional rapid transit system were also endorsed.

The implicit overall strategy adopted by the City for dealing with the problems of growth and change consisted of the following key elements:

- o zoning regulations and other means to limit office construction and employment growth;
- o support for the construction of a regional rapid transit system; and
- o zoning regulations and civic initiatives to encourage more housing in and around the downtown.

This strategy was closely related to the GVRD's Livable Region Program, adopted in 1976. One of the central concepts of that program was and still is to promote a better balance of jobs to population in various parts of the region. In this context, more housing in and around the downtown was anticipated not only to increase the downtown's vitality, but also to help slow the growth of commuter travel by accommodating more workers in the core.

By adopting the strategy outlined above, the City rejected two clear alternatives debated since the 1960's. One was to severely limit office development and employment growth and thereby avoid large capital expenditures on a rapid transit system. The other was to permit office development without further restrictions than those in effect before 1973, and to service this employment growth with new amenities and major increases in transportation capacity, including a regional rapid transit system. Neither of these two alternatives found much favour with Vancouver residents.

The City's stragety, as it stands, is unlikely to serve the City well in dealing with future prospects. For one reason, because our projections assume no change in existing plans and policies, it can be said that the housing and transportation problems described so far in this report will be the result of continuing through the next two decades with existing means of dealing with growth. There is a second reason. About seven years have passed since the City's implicit strategy was adopted, but the expected results have not yet materialized. The rate of office space construction became, at least for a while, higher than it had ever been; residential development in and near the downtown was much less than anticipated; and progress on rapid transit has been slow. The GVRD's Livable Region Program has not been as successful as hoped in bringing about a better balance of jobs and workers in various parts of Greater Vancouver. And, while the increased vitality and attractiveness of the core is quite evident to those of us who have been here since the early 1970's, transportation accessibility and housing affordability have deteriorated.

These results strongly suggest that the City's implicit strategy for the core has not been entirely effective. The challenge of the early 1970's is repeated once more. To meet this challenge, more effective means must be found to avoid or mitigate the problems generated by continued growth in office space and employment in the core.

2. Alternatives to the Trend

As was explored in the mid-1970's, there are three basic ways of addressing the consequences of employment growth in the core:

1. Limit office space development in the core and direct it to surburban centres to reduce the rate of employment growth in the core and the volume of housing and travel demand generated by the new employment.

   This option reflects the GVRD's Livable Region Program concept of shifting the focus of new office and commercial development away from downtown by creating regional town centres in suburban municipalities. Downtown growth would be limited and housing and employment opportunities would theoretically expand in a more balanced way. It should be cautioned, however, that there is growing skepticism about the soundness of the Livable Region Program. Not only has it had limited success but there is doubt that the distribution of growth around the region which it recommends would produce a more equitable distribution of the costs and benefits of regional growth among GVRD cities and municipalities.

2 Increase the capacity of the regional transportation system to accommodate the increased transit ridership and vehicular traffic generated by concentrated employment growth.

   Vancouver might follow the pattern of older European cities where the wealthy live in the city and the less well-off commute long distances (In U.S. cities, it is the well-off who commute, while the poor live in the central city). This option means continuing to develop executive housing in the city and putting public investment into transit. It means letting the city's established neighbourhoods retain much of their present character while improving accessiblity to the core for workers living the the suburbs.

3. Increase housing potential in the city and encourage residential development to accommodate core employees to reduce the rate of commuter travel growth, and to better utilize available transportation.

   The potential for 35 000 additional units of housing, discussed earlier, involves a good deal of optimism about what can be accomplished under existing zoning. It involves pushing the status quo to its limits. Only the opening up of new areas for housing and of increasing densities in existing residential areas offer some realistic possibilities for accommodating significant increases in resident labour force to match employment growth in the core. It will also be desirable to maintain a diverse labour force, as required by the core economy, and this

means that some older but adequate and affordabale housing should be retained.

A first step in revising the City's current strategy might be to clarify and resolve conflicting goals and objectives for the core. Some of the weakness in the City's present strategy appears to lie in inconsistencies that reflect widely divergent and somewhat incompatible views among city residents. If the strategy is weak in moderating the rate of office space development and diverting some of it to Regional Town Centres, it could be because many people want a big, vital downtown business district, our own Manhattan. If the strategy is weak in obtaining a greater supply of housing, it could be because too many residents, comfortably housed in attractive neighbourhoods, have resisted attempts to encourage more housing in their vicinity. If the strategy is weak in transportation matters, it could be because we resist or cannot easily afford the kinds of costly improvements necessary to accommodate increased travel demands.

A fundamental challenge raised by the core's growth trend is to reconcile these ambivalences. However, the diversity of views among city residents about what kind of city Vancouver should be and the considerable uncertainty about what it can become are arguments against an obvious and single-minded emphasis on any one strategy alternative listed above.

It is not proposed to discuss the many pros and cons of each of these alternatives, nor the varying emphases upon them which seem feasible. The purpose of this particular background report is to specifically examine the housing implications of core employment growth. For this reason, the housing alternative is explored more fully below.

3. A Housing Strategy

One possible strategy for accommodating core employment growth and thereby moderating growth in commuter travel, congestion, travel costs, and transportation expenditures is to significantly increase housing opportunity in the city. A civic initiative which could accomplish this would be to revise the City's existing housing policies and their implementation tools in such a way as to let the housing market place become more responsive to housing demand (for an overview of the City's current housing plans and policies, see Vancouver's Existing Housing Policies, Understanding Vancouver's Housing, Part II, revised May, 1981).

Limited resources and jurisdiction restrict the actions the City can take to increase housing opportunity. Among the City's limited

powers is the ability to control the amount, type and location of housing through zoning. Specifically, zoning regulations which regulate what land use and density of development are allowed on any piece of land in the city could be amended to allow housing where it is not permitted now or to allow more of it where it is permitted already.

The last major increase in the city's housing capacity took place in 1964 when apartment sites were added around suburban commercial centres. In the mid-1970's, zoning regulations were changed to create a potential for about 7 500 dwellings in mixed-use developments in various sub-areas in the CBD, about 4 500 on the north shore of False Creek and 1 800 on the south shore of False Creek. About 12 000 housing units had initially been proposed for the waterfront but, because of hazardous rail shipments passing through it, this component was not included in any of the sub-area plans when the Official Development Plan was adopted for the waterfront in 1979. While these various actions suggest considerable increase in residential development potential, they were somewhat countered by amended zoning regulations in other parts of the core. Examples include reduced maximum building heights in Kitsilano and the West End.

At present, housing densities throughout most areas of the city are uniformly low, although they are somewhat higher on the east side of the city. High density areas are concentrated in and around the downtown peninsula. Apartments provide the majority of units in the city's central area and in adjoining Kitsilano, Fairview Slopes, Mount Pleasant, Downtown Eastside, Strathcona, and Grandview-Woodland. With the exception of Kerrisdale and Marpole, single family homes predominate in the rest of the city. The city provides a classic textbook case of a higher density core grading out to low-density, suburban-style housing.

In this context, the City's remaining zoned potential for 35 000 new housing units reflects historical housing trends. New units would continue to be added where we find the highest densities already and possibly where amenities and services are deficient. There would also continue to be little or no change in the single-family areas forming an unchanging, donut-like ring between the two sources of new housing, the core and the surrounding suburbs.

If there is to be more housing in the city than is possible under existing regulations, then these regulations will need to be amended to allow more housing. This would involve three tasks:

1) establishing a long-term target that specifies the number and type of dwellings, in net units, it is desired to add to the city's zoned potential for more housing;

2) identifying areas where amenities and excess capacities in physical and social services and facilities are suited to residential land use or increased housing density; and

3) adopting area plans and zoning by-law amendments for these areas which actually increase housing potential.

In establishing a housing target, several factors must be considered: potential employment growth in the core and elsewhere in the city, expected demand for housing from retirees and other non-worker households, potential in-migration, potential new household formation by existing residents, diversity of household types and sizes, the desirability of reducing growth in commuter traffic, and the need to maintain a competitive land market. It could very well be, after all these are considered, that potential should be increased to 100 000 units.

The second task is to identify specific opportunities for increased housing potential. Incentive or bonus schemes and spot rezonings have a role to play, but seem inadequate for significantly increasing the City's residential development potential. Instead, major zoning amendments may have to be considered which: permit the conversion of non-residential land to housing use, permit the mixing of residential use with non-residential land use, and increase allowable density in existing residential areas. Higher densities, the most promising of these opportunities, are possible through a number of options ranging from the provision of secondary suites to wholesale redevelopment.

Higher densities do not necessarily imply highrises but can include medium-rise apartment buildings as well as stacked townhouses. A large supply of high-density housing is proposed for B.C. Place and is also possible in future on the central waterfront (but revised zoning regulations are still necessary in both instances). Highrise development is likely in these areas. Elsewhere in the city, it might be more appropriate to encourage medium-density, ground-oriented housing, such as stacked townhouses, rowhouses, patio houses, and zero-lot-line development. These and other compact housing forms might also be suitable for infill development in areas where it is desirable to retain existing housing.

Locations and areas which are selected as most suitable for increased housing potential should have some combination of the following characteristics:

- Surplus Physical Infrastructure

  New density can be accommodated more inexpensively in

areas with excess physical infrastructure (e.g. sewers and utilities).

- o Surplus Social Infrastructure

  Ongoing expenditures for social services (e.g. education, health and other community facilities) can be minimized by directing new housing to areas with many underutilized services.

- o High Accessibility to Employment

  Areas well served by transit facilities or close to major employment centres can contribute to transportation efficiency.

- o Potential to Maximize Benefit from Public Investment

  The return to the public from fixed investment in urban facilities (e.g. ALRT) can be enhanced by locating higher density development near these facilities.

- o High Levels of Amenity

  By locating higher density development in high amenity areas, public expenditures to correct amenity deficiencies can be minimized.

- o High Net Gain in Dwelling Units

  A net gain in dwelling units can be maximized in non-residential areas and areas with comparatively low densities.

- o Low Proportions of Existing, Sound, Affordable Housing

  By directing development away from areas of existing affordable housing, modest-priced accommodation can be protected from the demolition/redevelopment cycle which forces up prices and displaces modest-income households.

- o Marketabililty

  Certain areas are more attractive to housing consumers than other areas and are more likely to have redevelopment follow an increase in zoning potential.

Three general principles underlie these criteria and should guide decisions about increased housing potential: (a) minimize new

public capital expenditures and maximize the return on existing investments, (b) minimize neighbourhood change and displacement of existing residents, and (c) promote marketable housing which can reduce redevelopment pressure on existing affordable rental housing. The first of these is the most important one, and is reflected in five of the eight criteria listed above.

This main principle is to seek increases in housing potential in areas with surplus social and physical facilities and services and an above-average provision of amenities. Such areas are unlikely to require major public capital expenditures to accommodate more housing. However, in many parts of the city, new housing might not be able to capitalize on excess capacity in existing investments without some expenditures to remedy deficiencies in other facilities and services. In these cases, the fiscal requirements of additional housing should prove to be much less than the cost of providing new infrastructure and transportation capacity in suburban locations.

As areas which can accommodate more housing emerge, consultative planning exercises should be initiated in them to determine with local residents what sorts of increased housing potential are possible and what can be done to minimize any problems that more housing could create. This could be a slow and difficult process. While most citizens accept the desirability of expanded housing choice, many resist initiatives to increase the potential for more housing near where they live. "Yes, but not in my neighbourhood!" has very often been the response to proposals for amending zoning regulations to permit multiple housing in areas of single-detached homes. This widespread resistance to increased densities frustrates many attempts to do something about the diminishing supply of affordable housing in Vancouver. It will also form a major obstacle to the strategy proposed here for dealing with the consequences of potential employment growth in Vancouver's core.

The dimensions of this dilemma were uncovered by the Vancouver City Planning Commission during its Goals for Vancouver program four years ago. About ninety percent of the many city residents who participated in this program wanted a broader range of housing rents and prices in the city as well as a wider range of housing types. However, the public also strongly supported the preservation of existing single-family areas. The VCPC found that:

> "Providing new affordable multiple housing by replacing existing stock has received a generally negative response from neighbourhoods where citizens are adequately housed ... Our public contact shows the community to be split down the middle on whether to allow multiple housing forms in all areas or concentrate it in only a few districts. A decision one way or the other will leave a large potion of the public dissatisfied."

Considerable public debate will likely be necessary to reconcile the city-wide and long-term benefits of expanded housing opportunity with the wish to preserve existing low-density neighbourhoods. The suitability of any particular neighbourhood for contributing to increased housing potential will have to be clearly demonstrated. The transition to higher density will have to be planned in such a way as to minimize disruption and uncertainty.

After area plans have been developed with local residents and met with their approval, they can be recommended for adoption by Council. Zoning and Development By-law amendments can subsequently be undertaken. As well, any capital projects needed to accommodate more housing can be programmed and initiated.

Increased housing potential, through zoning regulations revised to allow more housing in the city, is not sufficient by itself to ensure increased housing choice and opportunity. The City's very mixed success in achieving housing aims adopted in the mid-1970s carries a very important message. In particular, the failure to meet downtown peninsula population objectives illustrates a limitation of zoning regulations: they are quite effective in preventing particular forms or densities of development but can be quite helpless in making development occur. Developers and builders must be counted on to convert an increased potential for more housing into an actual increase in housing opportunity. However, insofar as the costs of scarce land and the limited supply of developable sites have constrained residential development in recent years, a much greater effective supply of redevelopable land should go a long way to stimulate an increased rate of housing stock growth.

To conclude, a housing strategy is proposed in these last few pages as a preferred means of dealing with the consequences of future employment growth in Vancouver's core. It seems far better suited to current circumstances than the other two strategy options. The office space and employment projections reported at the outset of our analysis are somewhat optimistic. They assume no change in existing plans and policies and they are based on the growth trends of the last two decades. This growth trend has recently faltered severely and unemployment has reached disturbingly high levels. A complete collapse of the world economy is predicted by a few experts while most others anticipate a slow and uncertain economic recovery.

Accordingly, it would seem unreasonably drastic at the present time to impose strict growth limits on commercial development in Vancouver's core. It also seems a costly and dubious proposition to charge ahead with major expansion of the region's transportation system. Both of these measures will have been unnecessary if

long-term growth prospects do not materialize. By contrast, an increase in the city's potential for more housing seems better suited to present circumstances.

Housing affordability is already a serious enough problem, even without future housing demand putting additional pressure on a limited housing supply. Because it seeks to expand housing opportunity, the housing strategy proposed here has a positive role to play no matter how small or large the dimensions of future growth might be. Although the problems of housing availability and affordability may not become less serious, they will perhaps be prevented from becoming far worse. Furthermore, we could avoid or reduce the environmental and capital costs of major transportation system improvements which would otherwise be necessary.

Managing the problems of core employment growth through an increased housing supply does not solve all problems however. Traffic circulation within the core and access to the core from various parts of the city might still have to be addressed with various street and transit service improvements. Some improvements in other services and facilities and in amenities might also be required. On balance, however, these expenditures are likely to be less than the civic expenditures which would be necessary if most new core employees had to commute from suburban homes. Considerable spending would be required in such circumstances to minimize the disruption inflicted by commuter traffic on the city's residential neighbourhoods, to maintain downtown peninsula accessibility, and to cater to the circulation and parking needs of suburban commuters in Vancouver's core.

* * *

APPENDICES

Appendix I. Dispersed Residential Location of Core Employees

Information about the location of employment (jobs) and the residential location of labour force (workers) is limited. Only with the 1971 Census of Canada did comprehensive data become available about people's place of work in relation to their place of residence. This information is incomplete and known to have errors, but within these limitations there is much that can be understood about the land use pattern and labour force behaviour which underlie regional travel patterns.

Table 1 shows the 1970 place-of-work/place-of-residence distribution for all employed labour force in the Vancouver census metropolitan area (CMA). The city is divided into geographic sub-areas, 4 through 11, as shown in Figure 1. These data are from special tabulations of 1971 Census data obtained by the City Planning Department and the GVRD Planning Department. Published information on these data include: Where Canadians Work, 1971 Census of Canada Profile Studies, Vol. V, Part 2, Bulletin 5.2-8, April 1978; Industries, 1971 Census of Canada, Vol. III, Part 4 (see especially Introduction to Vol. III, Bulletin 3.4-1); Background Information on the 1971 Census Place of Work Data, Research Memorandum, Statistics Canada, November, 1974.

There are some problems and limitations with these data (the last two sources noted above describe major errors in the data). First, about 9 percent of the Canadian labour force although employed, did not report a place of work or gave incomplete information. Second, further errors result from respondents who gave the name of the region or principal city of the region where they worked rather than the specific municipality or city. Census data undercount actual total employed labour force livng in the Vancouver CMA by about 16 percent as a result of respondents not naming any place of work or by naming the entire CMA rather than a specific city or municipality within it. In the 1971 Census, 440 245 persons reported themselves to be employed, and not just 368 130 as shown in Table 1.

There were 200 760 jobs in the city in 1971 according to these data. Adjusting for a 16 percent undercount would raise this figure to 240 090. This is judged to be too high. The GVRD Planning Department has estimated 1971 employment in the city to be 235 214 (an undercount of 14.7 percent).

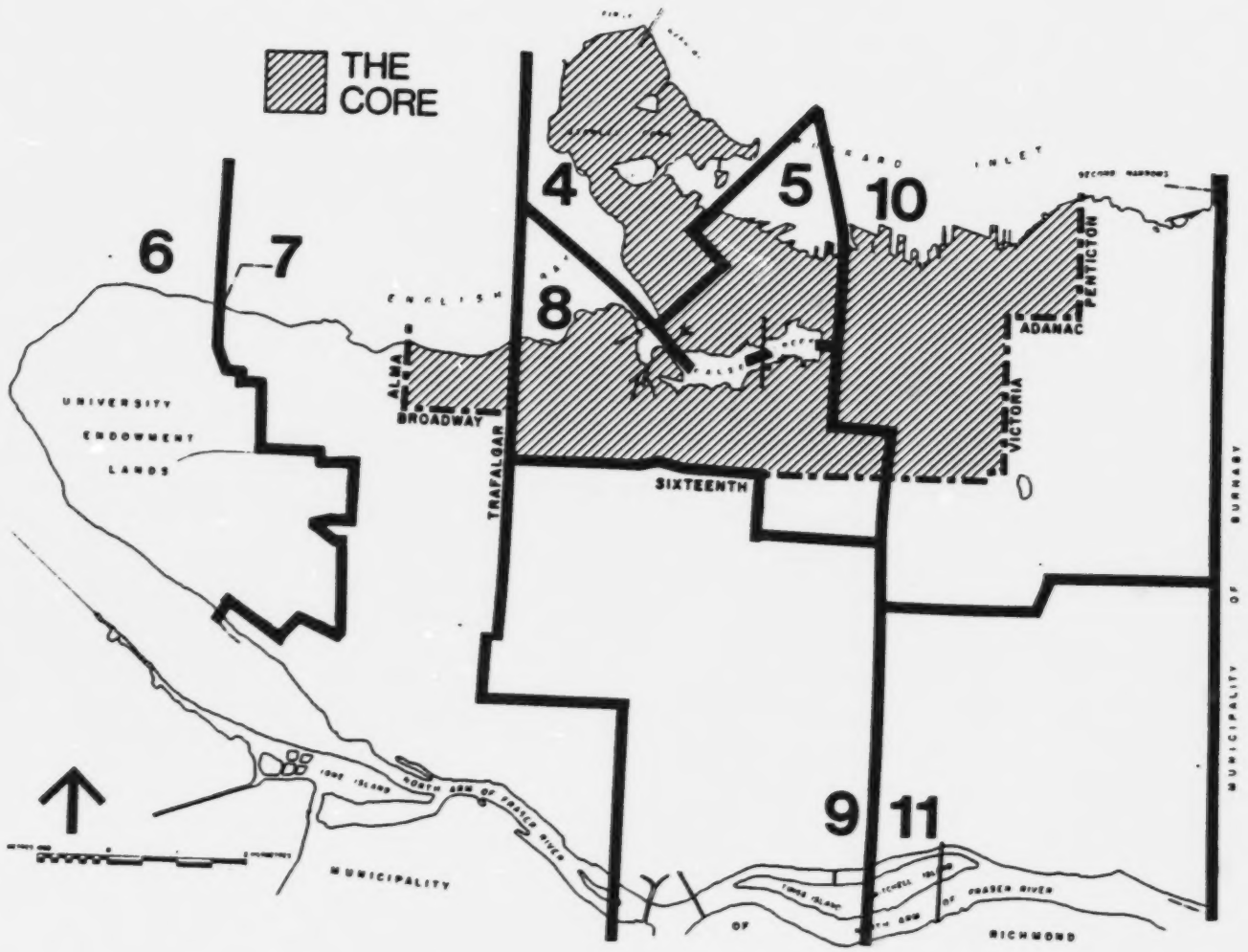
Table 1 shows a total employed labour force in the city of 165 330 persons. Adjusting for undercount raises this figure to 197 720. Other census data, less subject to error, show a total employed labour force in the city of 186 550 (an undercount of 11.4 percent). Table 2 summarizes data shown in Table 1. The core includes areas 4, 5, and 8 shown in Figure 1. The resulting

TABLE 1. Employees by Place of Work and Place of Residence, Vancouver Census Metropolitan Area, 1971 (1).

Place of Residence	Place of Work												
	West End	Downtown	Point Grey	Broadway	South Van.	Grandview	Champlain	City Total	At Home	Outside City	Sub-Total	Not Stated	Labour Total
4. West End	1 875	8 385	270	1 920	615	1 275	120	14 460	570	2 415	17 445	870	18 315
5. Downtown	90	735	15	150	15	60	0	1 065	240	135	1 440	90	1 530
7. Point Grey	615	6 255	2 205	3 765	1 860	1 560	360	16 620	900	4 635	22 155	825	22 980
8. Broadway	645	7 275	525	7 245	1 860	2 145	510	20 205	1 155	3 540	24 900	1 200	26 100
9. South Van.	825	8 490	720	4 650	5 580	2 910	1 005	24 180	1 755	5 340	31 275	1 305	32 580
10. Grandview	825	8 685	525	4 815	2 085	9 570	1 110	27 615	1 425	7 230	36 270	2 955	39 225
11. Champlain	465	4 935	360	3 165	2 415	3 060	2 325	16 725	1 230	4 920	22 875	1 725	24 600
City sub-total	5 340	44 760	4 620	25 710	14 430	20 580	5 430	120 870	7 275	28 215	156 360	8 970	165 330
Outside city	2 550	28 365	1 275	14 670	6 750	14 790	4 215	72 615	13 950	125 205	211 770	12 915	224 685
Sub-total	7 890	73 125	5 895	40 380	21 180	35 370	9 645	193 485	21 225	153 420	368 130	21 885	390 015
At home	570	240	900	1 155	1 755	1 425	1 230	7 275	---	13 950	---	---	---
Total	8 460	73 365	6 795	41 535	22 935	36 795	10 875	200 760	---	167 370	---	---	---

(1) Sub-areas of the city (i.e., 4, 5, 7, etc.) refer to those indicated on accompanying Figure 1.

Figure 1. Vancouver Statistical Sub-Areas, 1971 Census, Showing Core Boundaries



boundaries do not coincide with those that have generally been used in Coreplan studies (see map inside report cover).

Table 2. Employees by Place of Residence and Place of Work, 1971

Place of Residence	Place of Work			Total
	Core	Rest of City	Rest of CMA	
Core	30 285	7 410	6 090	43 785
Rest of City	47 490	42 960	22 125	112 575
Rest of CMA	45 585	27 030	139 155	211 770
Total	123 360	77 400	167 370	368 130

About 45 600 suburban residents commute to jobs in the core, according to these data. This is about 37 percent of core employment shown. About 27 000 commute to jobs elsewhere in the city. In all, about 72 600 workers commute to jobs in the city from homes elsewhere in the CMA. This is about 36 percent of all jobs in the city. Meanwhile, about 28 000 city residents go to jobs outside the city. These represent about 18 percent of the city's labour force.

An attempt will now be made to adjust these data so as to correct for undercounting and core boundary differences. Since actual counts of employed labour force by place of residence are available from the 1971 Census, it was decided to estimate the place-of-work distribution of this labour force on the basis of data in Table 1. Table 3 summarizes from Table 1 the proportions of core-employed labour force residing in various locations.

Table 4 applies the last column in Table 3 to actual employed labour force (ELF) figures from the 1971 census. The resulting estimate of 1971 core employment (145 300) is not all that pertinent, and is not intended to be used outside of this particular context. What is more pertinent is the distribution of core employees by place of residence (the last column in Table 4 below).

Table 4 shows that an estimated 33 percent of the metropolitan area's labour force worked in the core. An estimated 35 percent of these core employees commute to work from homes outside the city, a further 30 percent live in the city, but outside the core, and 35 percent live in the core. About 65 percent of the employed labour force residing in the core also works in the core. About 40 percent of the employed labour force residing in the rest of the city works in the core.

Table 3. Core Employees by Place of Residence, 1971

	Employed Labour Force	Employed In Core	Percent of Employed Labour Force
Peninsula (1)	19 845	13 965	70.37
Rest of Core (2)	26 100	16 320	62.53
Total Core	45 945	30 285	(65.92)
Rest of City	119 385	47 490	39.78
Total City	165 330	77 775	(47.04)
Rest of CMA	224 685	45 585	20.29
Total CMA	390 015	123 360	(31.63)

(1) Areas 4 and 5 on Figure 1.
(2) Area 8 only, on Figure 1.

Table 4. Core Employees by Place of Residence, Revised Estimate, 1971

Place of Residence	Employed Labour Force(1)	Core Employment (Estimated)		
		Percent of ELF (2)	Employment	% of Core Employment
Peninsula	24 035	70.37	16 915	11.64
Rest of Core	53 905	62.53	33 705	23.20
Total Core	77 940	(64.95)	50 620	34.84
Rest of City	108 610	39.78	43 205	29.74
Total City	186 550	(50.29)	93 825	64.58
Rest of CMA	253 695	20.29	51 475	35.42
Total CMA	440 245	(33.00)	145 300	100.00

1. Source: 1971 Census. Census tract data are used, allowing adherence to peninsula and core boundaries.
2. Source: Table 3.

Because relevant data are unavailable, no attempt will be made to estimate what the residential location of core employees might be in 1981. Instead, the 1971 place-of-work/place-of-residence distribution will be assumed to be a still valid indicator of present circumstances.

Appendix II. Workers Per Dwelling

The housing demand projections undertaken in this report are made on the basis of the average number of workers per dwelling (WPD). Dividing a projected increase in employment by this ratio yields the number of dwellings required to accommodate additional employees.

The WPD ratio used in this report was calculated from the most recent census data at the time of analysis. The results are shown in Table 1. The ratios become larger the farther away from the core are the residential areas considered. The ratios range from 0.89 in the core to 1.31 in the suburban parts of the metropolitan area surrounding Vancouver. For Vancouver hjouseholds there is an average of 1.16 workers per dwelling.

Table 1. Workers Per Dwelling, by Location, 1976

	Employed Labour Force	Occupied Dwellings	Workers Per Dwelling
Peninsula	22 685	25 490	0.89
Rest of Core	44 260	43 075	1.03
Total Core	66 945	68 565	(0.98)
Rest of City	118 470	91 665	1.29
Total City	185 415	160 230	(1.16)
Rest of CMA	323 295	247 325	1.31
Total CMA	508 710	407 555	(1.25)

The WPD ratio is formed by two terms. The numerator or upper term is employed labour force (ELF) or people who are actually working. The denominator or lower term of the ratio is total occupied dwellings, or total private households. These include all households in a given area, both those with a wage-earner in them and those without. Interpretation of the WPD ratio is simple: the higher the ratio, the fewer dwellings would be required to accommodate a given number of workers and their associated population; the lower the ratio, the more dwellings would be required.

There are two minor limitations of note. First, not all the employed labour force is employed full-time. Because some are employed only part-time (or seasonally), ELF will be mis-estimated. Second, collective dwellings or households (e.g. hospital and

nursing homes) are not included in the count of occupied dwellings used here. Neither of these two limitations is judged to be of great enough consequence to warrant the additional analysis necessary to take them into account.

There is a far more serious limitation, but one that will be overcome with further analysis when 1981 Census data is available. Presently available data do not permit us to determine how many dwellings are occupied by only those people in the labour force and employed. Households without wage-earners, i.e. retired, unemployed, or otherwise not in the labour force, cannot be separated from those with wage-earners.

Because of this limitation, any estimate of housing demand based on the overall WPD ratio identified here will over-estimate the amount of housing required by new workers. However, insofar as growth in non-working population and households parallels or does not exceed growth in employment, this procedure has the advantage of addressing sources of housing demand unrelated to employment growth. The fact that the labour force participation rate of the adult population has gradually increased over the last three decades supports this procedure.

The worker-per-dwelling ratio used in the projections of housing demand generated by core employment growth is 1.17, as determined in Table 2. This overall WPD ratio is obtained by applying the WPD ratios in Table 1 to 1971 core employment by place of residence (see Table 4, Appendix 1).

Table 2. Workers per Dwelling, Core Employment 1971.

Place of Residence	Core Employees	WPD	Households
Downtown Peninsula	16 915	0.89	19 006
Rest of Core	33 205	1.03	32 238
Rest of City	43 205	1.29	33 492
Rest of CMA	51 475	1.31	39 294
Total	145 300	(1.17)	124 030

Utilization of this WPD ratio involves an important assumption. Because the average number of workers per dwelling at a given moment in time is the outcome of the housing market's operation, its

application to some future moment implies a constancy in the state of those variables determining the value of WPD in the first instance. These variables include household income, assets, and preferences affecting housing demand, as well as variables affecting housing supply (for more on this subject see, for example, Understanding Vancouver's Housing, Part III, Vancouver Planning Department, 1979).

WPD has been declining over the past three decades, as shown in Table 3. It shows the total number of households, the size of the employed labour force, and the resulting WPD between 1951 and 1976 for the city and the rest of the census metropolitan area (CMA). These data show that the city's WPD declined about 20 percent between 1951 and 1976. WPD increased 8 percent in the rest of the CMA. Until 1971, WPD was higher in the city than in the rest of the metropolitan area.

Table 3. Workers Per Dwelling, 1951-1976

Year	City of Vancouver			Census Metroplitan Area	CMA Excluding City (a)	City/a
	Households	ELF				
1951	101 330	141 247	1.39	1.33	1.21	1.16
1956	108 953	n/a	-	-	-	-
1961	118 405	149 280	1.26	1.22	1.18	1.06
1966	136 611	n/a	-	-	-	-
1971	153 295	186 550	1.22	1.27	1.32	0.92
1976	160 230	185 415	1.16	1.25	1.31	0.89
1981	173 432	n/a	-	-	-	-

Several factors were examined to see what might account for the difference in WPDs between the city and the rest of the metropolitan area. It was found that Vancouver had a greater percentage of households with a head aged 65 years or over than did the rest of the CMA (22 and 15 percent respectively in 1976). Similarly, Vancouver had a greater percentage of single-person households (34 and 17 percent respectively in 1976). Table 4 shows WPD ratios for households with more than one person and with a household head under 65 years of age.

A comparison of the two tables suggests that it is the city's increasing proportion of single-person and elderly households which reduces its WPD ratio below the level of the rest of the CMA. When

Table 4. Workers Per Dwelling (Excluding Dwellings Occupied by a Single Person or with a Household Head aged 65 Years or Over), 1951-1976

Year	City	Census Metropolitan Area	CMA Excluding City	City + CMA Excl. City
1951	1.91	1.77	1.53	1.25
1956	-	-	-	-
1961	1.81	1.63	1.46	1.24
1966	-	-	-	-
1971	1.77	1.65	1.59	1.11
1976	1.74	1.66	1.63	1.07
1981	-	-	-	-

only those households with 2 or more persons and with a head below 65 years of age are considered, Vancouver has a higher WPD than the rest of the CMA (1.74 as compared to 1.63, or 7 percent greater). This is consistent with popular observations that the higher cost of housing in Vancouver compared to the suburbs requires a greater household income, which in turn requires that the income of the main household wage-earner be supplemented by that of a second wage-earner.

Table 4 also shows that Vancouver's WPD has been falling while in the rest of the CMA it has been increasing. Both seem to be converging towards a similar value. Decline in the city's WPD ratio over the 1951-1976 period might be explained by such things as the increasing number of wage-earning older children who leave home to live on their own, the decreasing number of extended families and doubled-up families, and the increasing number of single-parent families. In the suburbs, by contrast, these phenomena have not been so common as families there have generally been smaller and younger to begin with. Also, as the number of working mothers has increased so has WPD.

What about WPD over the next two decades? Some clues are provided by average household size, with which it is closely related. This has declined significantly over the last two decades but now appears to be stabilizing — as it must if households are to have any people in them at all. Some further decline is still anticipated by demographers and housing analysts but not so great as

has occurred in the past. On the assumption that this applies as well to WPD, and since there is no basis for postulating the extent to which WPD might further decline, it will be held constant for projection purposes. However, this requires the caution that estimates of future housing demand will probably be on the low side -- for if future WPD is lower than it was in 1976, more housing will be required than would be estimated with a constant WPD.

Appendix III. Residential Development Potential

It is estimated that there is a potential, under current zoning regulations, for 35 000 additional housing units in Vancouver (as of June 1, 1980). This is a 20 percent increase in the size of the present stock (178 000), for a total stock of 214 000 dwellings.

Land With Residential Potential

Zoning establishes the development potential for property by regulating the use of land and the density of development. A comparison between (a) the current use of land and density of land use and (b) the potential uses and densities permitted under present zoning regulations can identify opportunities for increasing the housing stock. Single-detached dwellings in multiple-dwelling zones are an example of the underutilization of land in this context. Their sites are zoned for a use allowing more dwellings than is currently provided on them.

The city's residential development potential was estimated using the B.C. Assessment Authority property tax roll, otherwise known as the Property Tax File (PTF). A summary was produced from this file to show the number of properties and acreage by land use category, zoning schedule, and geographic sub-area.

The city's total land area, exclusive of streets and lanes, is about 22 720 acres. About 1 205 acres, as shown in Table 1, or 5 percent, are vacant or underutilized, and redevelopable to a higher-density residential use. This is about 6.5 percent of all land zoned for residential use in Vancouver, an area roughly 1.2 times the size of Stanley Park.

Table 1. Land With Residential Development Potential, 1980

Current Land Use	Maximum Residential Use Allowed			Total Land Area	
	Single Detached	Duplex Conversion	Apartment & Conversion	Acres	%
Vacant	198.4	10.6	41.7	300.7	25.0
Single-Detached		463.6	130.5	594.1	49.3
Duplex or Conversion			125.0	125.0	10.4
Other			184.8	184.8	15.3
Total Land Area	198.4	474.2	532.0	1204.6	100.0

Table 1 shows that about half of this land is now occupied by single-detached dwellings. About a quarter of the available land is vacant, though it is not known how much is already in the process of redevelopment. The "other" category consists of lands in the False Creek Comprehensive Development District which are now either vacant or used for non-residential purposes, but which might be redeveloped in a residential use.

Not included in this estimate are properties in non-residential and non-conforming uses. Among these are schools and parks, golf courses and riding stables, and neighbourhood grocery stores or other retail.

Housing Potential

Zoning determines housing potential by regulating land use and density. In terms of use, zoning determines whether or not a residentially-zoned property is permitted to have a one-family dwelling, a two-family dwelling, or a multiple dwelling. In addition to this, zoning regulates the floor space ratio (FSR). FSR (the ratio of floor space to site area) ranges from a low of 0.60 in RS districts to a high of 3.00 in the West End District.

Since dwelling sizes are not regulated directly, the housing potential (gross) of vacant or under-utilized residentially-zoned land was estimated on the basis of development densities observed in residential development activity over the 1974-1979 period. As shown in Table 2, these range from 10 dwelling units per acre (dua) in RS zones to 100 dua in the West End District.

Table 2. Residential Development Density, 1974-1979

General Zoning Category		Dwelling Unit Density (units/acre)
RS	One-Family Dwelling District	10
RT	Two-Family Dwelling District	20
RM	Multiple Dwelling District	80
FM-1	Fairview Multiple Dwelling District	80
FCCDD	False Creek Comprehensive Development District	--
WED	West End District	100
DD	Downtown District	80
CD1-1	Comprehensive Development District	30

It is estimated that about 46 000 new housing units could be built in Vancouver. However, construction of this new housing depends upon the demolition or conversion of dwelling units now occupying redevelopable land. As shown in Table 3, 6 600 existing single-detached dwellings and 4 400 duplex or conversion units would be affected. The result is a net housing potential of about 35 000 units, as of mid-1980. The location of this housing potential across the city is shown in Figure 1.

Table 3. Estimated Net Housing Potential, 1980

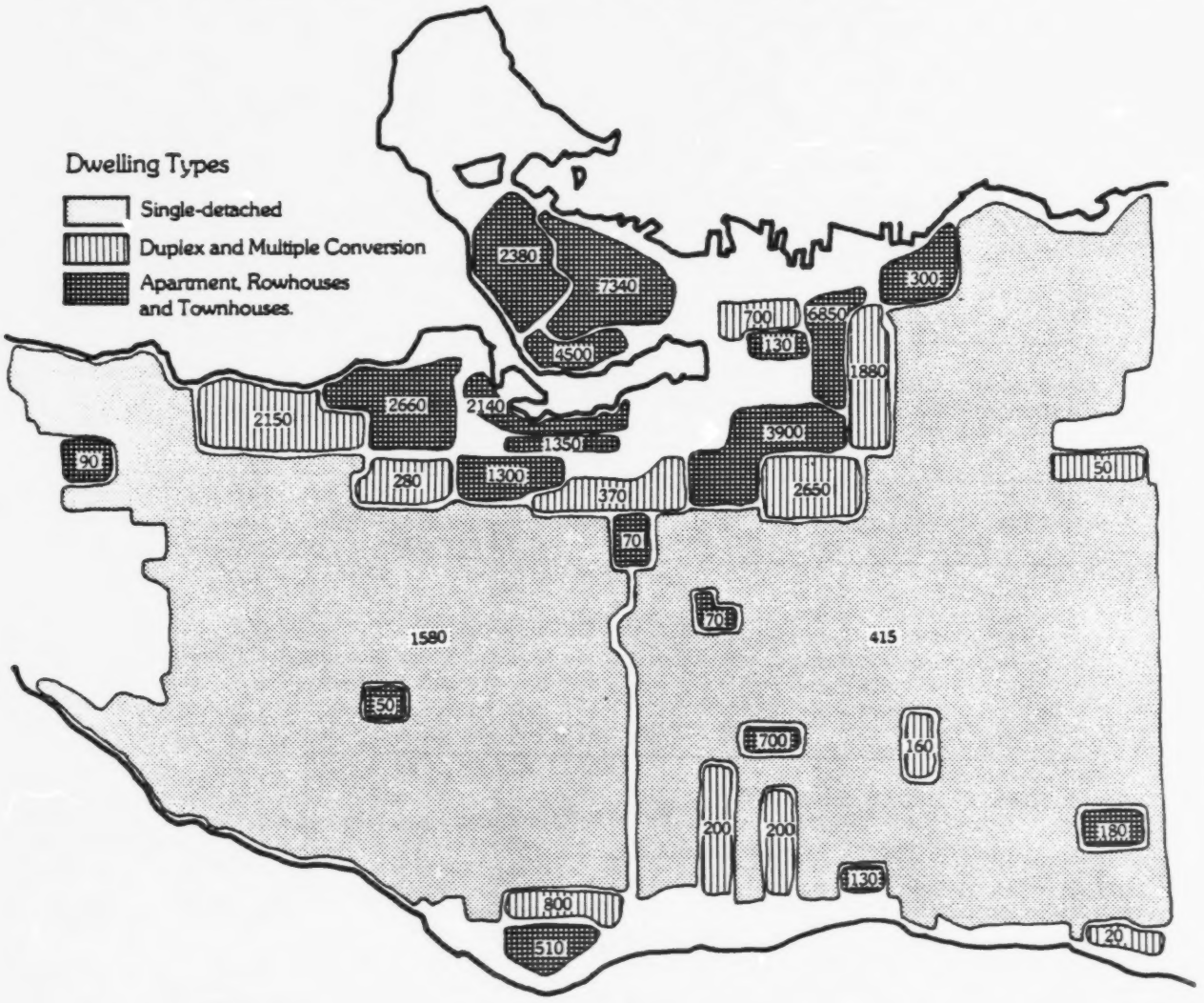
Dwelling Type	Gross	Demolitions	Net
Single-Detached	2 000	6 600	- 4 600
Duplex and Conversion	9 500	4 400	5 100
Apartment and Townhouse	34 500	-	34 500
Total Dwellings	46 000	11 000	35 000

The estimate of potential in the False Creek Comprehensive Development District was based upon the maximum number of housing units specified in the various area development plans for False Creek, as follows:

Area 2 (North Shore)		4500
Area 6 Phase 2	600	
Area 7 Phase 3	700	
Area 10A	540	
Area 10B	300	
Areas 6 & 10 (South Shore)	2140	2140
TOTAL		6640

The estimate of potential in the Downtown District has two components: (a) redevelopment of vacant land to mixed uses including residential use at 80 dua (a total of 2 340 units), and (b) an additional 5 000 units on sites now in their "highest" or maximum use (i.e commercial) but whose structures might be replaced

Figure 1. Potential for Additional Housing Units (Gross)



or converted to include a residential component (as encouraged by floor space bonuses). The total gross potential in the downtown (7340) is an optimistic one, but is counterbalanced by the likelihood that False Creek North Shore is proposed to be developed by B.C. Place to include as many as 12 000 housing units, about 7 500 more than current zoning allows.

Impact on the Existing Stock

The preceding estimate of housing capacity represents a twenty percent increase in the stock of housing in Vancouver. The current composition of the stock would be significantly changed if this housing potential was fully realized.

Table 4. Potential Change in the Composition of the Housing Stock

Dwelling Type	Existing		Potential		Change
Single-Detached	72 800	40.9%	68 500	32.0%	- 5.9%
Duplex and Conversion	12 300	6.9%	18 000	8.4%	+46.3%
Apartment and Townhouse	93 000	52.2%	127 600	59.6%	+37.2%
Total Dwellings	178 100	100.0%	214 100	100.0%	+20.2%

Single-detached housing would form a smaller part of the housing stock than at present while higher density types of housing would form a much larger share. It is estimated that apartment and townhouses or rowhouses would grow from 52 to 60 percent of the stock, while single-detached housing would fall from 41 to 32 percent.

Limitations

The estimate of housing potential described here has three major limitations. First, not all vacant or underutilized sites, i.e. sites not in a use which would yield the highest allowable, are feasible to redevelop. Apartment and townhouse development generally involves the prior consolidation of properties which are in themselves too small to develop to maximum use and density (given sideyard, setback, and other requirements). Small, "locked-in" properties, bounded on either side by properties already developed to their maximum, have little if any development potential. While it is possible to inventory the number of vacant or undeveloped properties and their site sizes, there is no practical means of determining how many are "locked-in". As a result, our estimates of housing potential over-estimate actual potential.

Second, not all sites developed in their maximum use are developed to the maximum density allowed. The difference between their present density and the maximum allowed could be sufficient to

justify redevelopment at some point. Examples of this are the building of three houses where two stood before, and the construction of a 40-unit apartment building where a building of 30 units previously stood. Insofar as such underdeveloped properties could not be included in our estimates, capacity will be under-estimated.

A third limitation is that allowable floor space densities for apartment buildings and other medium-to-high-density housing types are variable. Most zoning schedules have bonus elements, e.g. for social housing or amenities, that can give a project a higher floor space ratio, and hence more dwelling units, than is allowed outright. Dwelling unit sizes are also variable. It is for these reasons that average dwelling unit densities in recent development have been used to estimate potential. However, dwelling unit size and the use of floor space bonuses can change over time. This would alter average dwelling unit density and either under or over-estimate residential devlopment potential.

Considerably more analysis, using much better data than is presently available, would be necessary to take these factors into account in the development of firmer estimates of housing potential.

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